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**The management of osteoarthritis in general practice:  
development and implementation of a model consultation**

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Doctor of Philosophy

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# **ABSTRACT**

## **Background**

People with osteoarthritis (OA) frequently consult general practitioners (GPs) for the problem but the care they receive in these consultations is often sub-optimal. The aim of the studies described in this thesis was to enhance GP clinical practice for OA by developing and implementing a model OA consultation for the initial contact between a GP and an older patient presenting with peripheral joint pain.

## **Methods**

A consensus exercise was undertaken to develop the model OA consultation. This was followed by the development, and delivery in a series of workshops, of a behaviour change intervention to implement the model in practice. Impact of workshops was assessed by before-and-after methods on directly observed GP use of the model OA consultation in video-recorded consultations with simulated patients, and by self-report measures (at baseline, and one and five months after). Learner reactions and delivery in day-to-day practice were assessed.

## **Results**

The model OA consultation consisted of 25 tasks for assessment and initial management. A four workshop series was developed and delivered to 24 GPs and included didactic, interactive and skills training (with simulated patients) sessions. The workshops addressed barriers and facilitators for change identified in the development of the behaviour change intervention. GP use of the model OA consultation, by 15 GPs whose video-recorded consultations were assessed, was enhanced after workshops compared with before, evidenced by increased use of 14 tasks from a median of 7 tasks before to 11 after. Impact on self-report measures was inconclusive. Learner reactions were positive but delivery in day-to-day practice was limited.

## **Conclusion**

A before and after study has demonstrated that GP use of a model OA consultation in a simulated setting can be enhanced. Further research and quality improvement initiatives will be needed to enhance use of the model OA consultation in day-to-day practice.



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## OVERVIEW OF THESIS

This thesis comprises nine chapters and describes a practical piece of work to enhance the care of people with osteoarthritis (OA) by general practitioners (GPs). The flow of the thesis is presented below:

### 1. The background and rationale for the thesis (chapter 1):

- The nature of OA and its treatment as they relate to general practice is summarised
- The setting for work undertaken in this thesis, the intervention arm of a cluster randomised trial (the Managing Osteoarthritis in Consultations (MOSAICS) trial), is described
- The case is made for the need to enhance GP clinical practice for OA, specifically in relation to the initial consultation between a GP and an older patient with joint pain

### 2. The task of selecting the approach to enhancing clinical practice (chapter 2):

- The chapter reviews different approaches to enhancing clinical practice
- The case is made for selecting an "implementation" approach to changing clinical practice
- This approach informs the aim and objectives of the thesis

### 3. Aim and objectives of the thesis (restated at the end of chapter 2)

- The overall aim of the thesis is to develop a model OA consultation to guide GP clinical practice for the initial management of OA, and to implement the use of the model OA consultation by GPs.
- Specific objectives
  - Development of a model OA consultation
    - Undertake a consensus exercise to reach agreement on tasks to be undertaken by GPs when consulted by older adults presenting with peripheral joint pain
  - Implementation of GP use of the model OA consultation
    - Utilise theory to develop a behaviour change intervention to implement the model OA consultation



- Select and develop methods and measures to evaluate the impact of the behaviour change intervention and describe their use and analysis in this thesis
- Deliver the behaviour change intervention to GPs participating in the MOSAICS trial
- Present and discuss the impact of the behaviour change intervention

#### **4. The model OA consultation consensus exercise (chapter 3)**

- The chapter describes the development and undertaking of a three-round consensus exercise with two expert groups (GPs and patients) to develop the model OA consultation
- The consensus reached was that the model OA consultation should consist of 25 tasks for the assessment and initial management of an older person presenting with peripheral joint pain
- The chapter concludes that the next step is to develop an intervention to implement the use of the model OA consultation using the approach to changing clinical practice selected in chapter 2

#### **5. The development of an implementation / behaviour change intervention (chapter 4)**

- The chapter describes the systematic development of an intervention, utilising theoretical frameworks / models identified in chapter 2, to enhance the clinical practice (behaviour) of GPs in using the model OA consultation
- Specifically two of the frameworks or models enabled potential barriers and facilitators to change (termed “determinants of change”) to be identified and addressed in developing the intervention
- The development resulted in a detailed programme for four workshops to deliver the intervention describing the content, mode of delivery and practicalities of delivery of the workshops, and the behaviour change techniques to be used in the workshops
- The chapter concludes that the next step is to select and develop methods and measures to evaluate the impact of the workshops

## **6. Methods and measures to evaluate workshop impact (chapter 5)**

- The chapter describes the choice of six methods - five at the level of the GP and one at the level of the GP practice – to evaluate the impact of the workshops
- The GP level evaluations chosen were before and after assessments of: i) change in clinical practice for OA observed in video-recorded consultations with simulated patients (for brevity “the videos”), ii) change in self-report of OA clinical practice using a vignette questionnaire, iii) change in self-reported uptake of NICE OA recommendations, and iv) change in self-report status of identified determinants of change. And v) post workshop assessment of learner reactions
- The practice level evaluation chosen was an audit of delivery of four tasks of the model OA consultation in day-to-day practice
- The chapter describes the methodology and measures used for these evaluations, including developmental work undertaken

## **7. Methods and measures to assess clinical practice for OA observed in the videos (chapter 6)**

- The chapter describes the methods to be used to assess delivery of the model OA consultation in the videos
- The chapter describes the detailed development of an instrument to assess model OA consultation delivery, and establishment of content validity, assessing criterion validity and inter-observer reliability
- The chapter discusses the strengths and limitations of the assessment methods and measure and concludes that the approach adopted for the measurement of change in clinical practice appears valid and reliable for the purposes of the thesis

## **8. The delivery of the workshops (chapter 7)**

- The delivery of the workshops by the MOSAICS trial team is described by way of an audit: presenting the extent to which the workshops were delivered against five parameters, that:
  - The necessary workshops were organised and undertaken

- The GPs working in the practices attended the workshops
- The proposed content was covered in the workshops
- The proposed techniques were used in the workshops
- The workshops adopted an adult learning approach
- The chapter concludes that there is evidence to contend that the workshops were delivered as intended and that they did achieve, in terms of delivery, what they set out to achieve

## **9. The evaluation of the workshops (chapter 8)**

- The chapter presents the results of the six evaluations of workshop impact:
  - At the level of the GP
    - Direct observation, before and after workshops, of :
      - Clinical practice observed in consultations with simulated patients
    - Self-report measures, before and after workshops, for:
      - Self-report usual practice for OA
      - Self-report uptake of NICE OA recommendations
      - Self-report status of determinants of change
    - After workshop evaluation of:
      - Learner reactions in GPs who attended workshops
  - At the level of the practice
    - An audit of delivery of four tasks of the model OA consultation

## **10. A discussion of the thesis (chapter 9)**

- The chapter discusses the work undertaken in the thesis:
  - Whether the aim and objectives of the thesis were met and the key findings in the thesis
  - The strengths and possible limitations of the methods utilised, with the aim of deciding on the level of confidence which can be placed in the findings

- Setting the findings of this thesis in the context of current new knowledge and initiatives for the care of people with OA in general practice
- The implications of the work undertaken in the thesis, and its findings, for clinical practice and for further research

# **1 BACKGROUND**

## **1.1 Introduction**

The overall aim of the research described in this thesis was to develop a model consultation to enhance the management of osteoarthritis (OA) by general practitioners (GPs), and to develop and evaluate an intervention designed to implement the use of the model consultation in clinical practice. This chapter sets out why there is a need to enhance GP management of OA and it is argued that:

- Although OA can be defined from a number of perspectives, it is the definition of “clinical OA” which is relevant to its diagnosis and management in general practice
- OA is a highly prevalent condition in older adults, is a cause of considerable disability, and merits attention by GPs
- People with OA present in general practice and, although there is national UK guidance on the management of OA, evidence suggests that current management of OA in general practice is not in line with guidance
- There is a need for research to be undertaken on how best to implement OA guidance in general practice
- The general practice consultation in which a person seeks help in managing their OA is an important focus of such research

The argument is presented as a series of introductory summaries of the key points, highlighting important sources of information, followed by in-depth consideration of some examples of the literature. These are not intended to represent a systematic or exhaustive review of the background material but are intended to present the context for the thesis. The

summaries are presented in the following order: i) case definition and diagnosis of OA, ii) community prevalence and impact of OA, iii) OA consultation prevalence in general practice, iv) recommended care for people with OA, v) current care for people with OA, and vi) the context of the PhD study (the Managing Osteoarthritis in Consultations (MOSAICS) trial).

## **1.2 Case definition and diagnosis of OA**

OA is a disorder of joints, principally of the knee, hand, hip and foot, in older people <sup>a</sup> which results in varying levels of pain, joint stiffness, reduced mobility and difficulty in undertaking activities of daily living. <sup>1</sup> It is not an inevitable consequence of ageing <sup>2</sup> but is an increasingly prevalent condition as people age. OA can be defined from different perspectives, leading to different approaches to diagnosis. An overview is given in this section.

### **1.2.1 Case definition: the disease perspective**

OA was described by Dieppe in an editorial in 2000, <sup>3</sup> for which he was set the challenging task of speculating about the management of OA over the next millennium, as:

“.. a mechanically driven, age-related disorder of evolution, in which tissue changes are dominated by aberrant repair responses. It is frequent in human beings because of their longevity, lack of genetic investment in the repair

---

<sup>a</sup> The World Health Organisation defines an older person as one aged 65 years and above (URL: <http://www.who.int/healthinfo/survey/ageingdefnolder/en/> accessed 04/03/2015) but in this thesis it is defined as a person aged 45 years and above (unless specifically stated otherwise), the age at which the National Institute for Health and Care Excellence recommends that the diagnosis of osteoarthritis can be made clinically (URL <http://www.nice.org.uk/guidance/cg177/chapter/1-recommendations#diagnosis-2> accessed 04/03/2015). However, for epidemiological studies different age cut offs have been used to define populations of “older adults” and the specific age cut off s used for these will be stated in the text of this thesis.

of age-related tissue damage, and the under-designed nature of their joints in relation to the usage made of them.”<sup>3</sup>

This description, in addition to highlighting the concept of OA as an “aberrant repair process” and that evolution has not provided us with the joints we need, points towards defining OA in terms of joint pathology. This is the approach traditionally taken in the medical literature: OA described in terms of the radiographic appearance of joint pathology using criteria developed by Kellgren and Lawrence.<sup>4</sup> These criteria use three radiographic features – osteophytes (bony spurs adjacent to the joint), diminution of joint space and increased subchondral opacification of bone (opacification of the bone just below the layer of cartilage) – to define OA. These were considered proxy measures of the underlying pathological changes deemed to be characteristic of OA, respectively: new bone formation, loss of cartilage and sclerotic thickening of periarticular bone (hardening and thickening of the bone adjacent to the joint).<sup>5</sup> With the advent of new imaging methods, such as magnetic resonance (MR) imaging and ultrasound, there continues to be an emphasis on describing OA in pathological terms, for example bone marrow lesions (non-specific imaging findings that are associated with pain in people with OA) on a MR scan and synovitis (inflammation of the lining of the joint) on an ultrasound scan.<sup>6</sup>

### **1.2.2 Case definition: the pain and functional perspectives**

Dieppe’s definition makes no mention of the symptoms of OA, commonly pain with or without stiffness, or of its consequences, loss of function and impact on people’s lives. However, qualitative studies have shown that difficulties in reducing the severity of pain, and preventing it becoming worse, and difficulties in undertaking everyday tasks or other valued activities, are what matter to people with OA.<sup>7-9</sup> It has been accepted that there is a need to adopt a broader definition of OA than one based simply on pathology.<sup>2, 10</sup>

One approach to broadening the definition is to define OA in terms of chronic joint pain. OA of the knee has been defined as knee pain lasting three months or longer in older adults (for epidemiological studies generally those aged 50 years or over), and similar approaches have been advocated for hip and hand OA.<sup>11-13</sup> The rationale for defining OA in this manner is that OA is the most frequent diagnosis made in older adults presenting with chronic pain in these joints, with only a limited number of other conditions that present in this way in older adults, all considerably less prevalent than OA.<sup>14</sup> This definition has particular utility at a population level, when the desire is to define the group of people, rather than the individual, with OA.

The World Health International Classification of Functioning, Disability and Health (ICF)<sup>15</sup> provides an internationally agreed framework which can be used to describe the personal experience and impact of OA. The ICF describes human functioning at three levels:

- Impairments (problems in body function or structure)
- Activity limitations (individual difficulties in carrying out an activity)
- Participation restrictions (individual problems with life situations)

The description of OA using the framework would classify: i) radiographic changes of OA (the visualisation of the underlying pathology) as structural impairments, and symptoms such as pain and stiffness as impairments of bodily function; ii) problems with mobility and activities of daily living, such as difficulty in walking or turning on a tap, as activity limitation; and iii) social aspects, such as being unable to work or play a round of golf with a grandchild, as participation restriction.



Clearly OA can be defined in terms of pain and function, and defining OA in purely pathological terms using radiographic imaging of the joint does not provide a sufficiently broad description.

### **1.2.3 Case definition: the clinical perspective**

Since pain is the symptom for which most patients with OA consult,<sup>16</sup> there is a compelling clinical argument for defining OA in terms of pain alone. This is the approach taken in the 2008 (and 2014) National Institute for Health and Care Excellence<sup>b</sup> (NICE) guideline for the management of OA in adults.<sup>1, 2</sup> The target population for the guideline is people with a working diagnosis of OA and, as can be seen in Box 1.1, pain was a core feature. Although “persistent joint pain” was not clearly defined by NICE, the cut-off between acute and chronic/persistent pain is generally taken to be at three months.<sup>17</sup> It seems reasonable to assume that the NICE OA Guideline Development Group was working with this assumption.

The Guideline Development Group considered the following to represent a clinician’s working diagnosis of peripheral joint osteoarthritis:

- Persistent joint pain that is worse with use
- Age 45 years old and over
- Morning stiffness lasting no more than half an hour.

Box 1.1 NICE 2008 OA Guideline recommendations for the diagnosis of OA (with permission and adapted from full NICE OA guidance document<sup>18</sup>)

The three-part criterion in Box 1.1 for defining OA is in line with the approach proposed by other bodies. For example, the American College of Rheumatology has published criteria for the classification of OA and have recommended clinical criteria for OA at the knee:

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<sup>b</sup> The National Institute for Health and Care Excellence (NICE) is an independent non-departmental public body with responsibility for developing guidance and quality standards in health and social care in England and Wales. Taken from NICE website, <http://www.nice.org.uk/> accessed June 2014.

- knee pain and at least three of:
  - age greater than 50 years, stiffness in the morning of less than 30 minutes, crepitus, bony tenderness, bony enlargement and no palpable warmth <sup>19</sup>

And for the hip:

- hip pain in combination with the degree of hip internal rotation, pain present on internal rotation of the hip, morning stiffness of the hip of less than 60 minutes and age greater than 50 years. <sup>20</sup>

In addition, The European League against Rheumatism (EULAR) has produced guidance for the diagnosis of knee and hand OA which both include clinical criteria for diagnosis, <sup>21</sup>, <sup>22</sup> and a working group of the Osteoarthritis Research Society International (OARSI) proposed that OA could be defined as a disease (radiographic structural change) and as an illness (patient reported symptoms of OA). <sup>23</sup>

#### **1.2.4 Diagnosing OA in general practice**

Although OA can be defined both radiographically and in functional terms, it is the clinical definition which NICE recommend for the diagnosis of OA, <sup>18</sup> and defined in this way is often referred to as “clinical OA”. However, a definition based purely on the presence of activity-related joint pain may be problematic when diagnosing individual patients. NICE OA guidance <sup>1,2</sup> recommends that “red flags”, such as a history of trauma, need to be checked for first and that other possible causes need to be considered and ruled out before a clinical diagnosis can be made. This approach to OA diagnosis is advocated in Arthritis Research

UK<sup>c</sup> information for healthcare professionals,<sup>24</sup> and mirrors the approach for the assessment of low back pain.<sup>25</sup>

In clinical practice a positive diagnosis of OA can often be made from the history of the presenting problem by eliciting the pattern of joint pain, both over time and according to which joints are involved. Characteristically OA joint pain, though persistent, flares and remits, and often affects more than one joint but not necessarily at the same time.<sup>26</sup> The task of excluding other diagnoses is influenced by which joint or joints are affected; at the knee there are only a limited number of alternative diagnoses to be considered, whereas at the hip, hand and foot there are a greater number of possibilities,<sup>24, 27</sup> and elucidating the problem may involve blood tests and imaging. In addition, imaging is often required for people in the later stages of OA, especially for those in whom arthroplasty is being considered. At this stage the degree of structural damage evident on a plain x-ray of the joint is an important consideration when advising on the need for surgical treatments.<sup>28, 29</sup>

To conclude, diagnosis of OA in the individual patient in general practice rests on the clinical definition of OA, can be made positively from the pattern of joint pain, involves the consideration of alternative diagnoses and may involve further investigation.

### **1.3 Community prevalence and impact of OA**

In reporting the prevalence of OA in the community, researchers have adopted a range of approaches: from defining OA solely in radiographic terms (radiographic OA), through defining OA with the use of radiographs plus symptoms (symptomatic radiographic OA), to

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<sup>c</sup> Arthritis Research UK is the leading UK funder of musculoskeletal research and provides information and support to healthcare professionals and patients on musculoskeletal conditions

defining it as chronic joint pain in older adults (clinical OA). This section presents an overview of the community prevalence and impact of OA, principally for clinical OA – the most relevant definition for this thesis - where data are available.

The World Health Organisation has reported that global prevalence of OA (defined as symptomatic radiographic OA) in people aged 60 years and over has been estimated as 9.6% for men and 18.0% for women.<sup>30</sup> A meta-analysis of OA prevalence studies published between 1995 and 2011 reported overall OA prevalence estimates (from studies reporting on radiographic OA or symptomatic radiographic OA or a self-reported diagnosis of OA) for the knee, hip and hand for adults of any age<sup>31</sup> and are shown in table 1.1.

	<b>Knee</b>	<b>Hip</b>	<b>Hand</b>
Women	27.3%	11.6%	43.3%
Men	21.0%	11.5%	44.5%
Total	23.9%	10.9%	43.3%

Table 1.1 Prevalence estimates of OA by joint site and sex in adults (with permission and adapted from (Pereira, Peleteiro et al. 2011<sup>31</sup>)

From these global figures the picture is that many more people have OA when defined broadly than when defined as radiographic OA with symptoms, that men and women are differently affected by knee OA, and that joints are differently affected. But these figures do not give the full picture of the prevalence and impact of OA in general practice and a number of additional questions require investigation such as, what is the prevalence of clinical OA of the knee, hip and hand?, to what extent do people with OA in one joint experience problems in other joints?, and to what extent does OA interfere with people's lives?

The sections below aim to describe the prevalence and impact of OA in older adults present in practice populations served by UK GPs using a selection of studies, principally reporting data from the UK, which illustrate the prevalence of radiographic OA (to give a historic perspective), the prevalence of clinical OA (by joint site, at multiple sites and in the person), and the impact of OA.

### 1.3.1 Radiographic OA in older UK adults

A historical perspective is offered in the classic study conducted by Kellgren and Lawrence in 1954, in which radiographs were taken in a one in ten sample of inhabitants aged 55 to 64 years of Leigh, then a coal mining town in Lancashire and now part of Greater Manchester.<sup>32</sup> In the sample, comprising 277 women and 204 men, the vast majority had radiographic features of OA (for definition of these features see this chapter section 1.2.1, page 2) in one or more joints x-rayed (87% of women, 83% of men). An illustration of the prevalence of radiographic OA in individual joints, in four sites, is shown in table 1.2.

	<b>Hand (DIP joint<sup>1</sup>)</b>	<b>Hip</b>	<b>Knee</b>	<b>Foot (1<sup>st</sup> MTP joint<sup>2</sup>)</b>
Women	55%	15%	58%	68%
Men	52%	27%	41%	44%
1 Distal interphalangeal joint		2 Metatarsal phalangeal joint		

Table 1.2 Prevalence of radiographic OA in a random sample of men and women aged 55-64 years (with permission and adapted from Kellgren and Lawrence 1958<sup>32</sup>)

This early work paints a similar picture to the global estimates presented in table 1.1 in which a high but differing prevalence in men and women is shown and that OA particularly affects certain joint sites, notably in this illustration the knee, hand and foot. But although the

prevalence of radiographic OA is of interest, this is not the OA which presents to GPs. It is the OA of chronic joint pain in older adults (clinical OA) which patients seek help with and whose prevalence GPs need to be aware of.

### **1.3.2 Clinical OA: chronic joint pain in older adults**

#### **1.3.2.1 In the knee**

Peat et al <sup>33</sup> reviewed studies published between 1966 and 1998 which reported the prevalence of clinical (and radiographic) knee OA. They estimated, from UK studies identified in the review, that 25% of adults aged 55 years and over had clinical knee OA (defined in this paper as knee pain for at least four weeks in the past year) and 25% had radiographic knee OA. The definition of clinical knee OA used in this review used a shorter duration of pain than the widely accepted definition, one month rather than three months in the past year, which may have yielded a higher estimate of prevalence than studies using the accepted definition.

Jinks et al <sup>11</sup> in their survey of adults aged 50 years and over registered with three practices in North Staffordshire in 2000, adopted as their core measure of duration “days in pain over the last year” (a criterion adopted by von Korf et al in the study of low back pain <sup>34</sup>). Utilising this metric they reported on the overall prevalence of knee pain and on the prevalence of chronic (days in pain three months or more in the past year) and non-chronic (days in pain less than three months in the past year) knee pain. They utilised the Western Ontario and McMaster Universities Osteoarthritis index (WOMAC) <sup>35</sup> to categorise severity of knee problems into severe (at least one item in the pain or function subscales of the

WOMAC rated as severe <sup>d</sup>) or not severe (no items rated severe). The overall prevalence of any knee pain in the past year in the sample of 6,792 adults aged 50 years and over was 46.8%. The one year prevalence by chronicity of knee pain and severity of knee problem is shown in table 1.3

Severity of knee problem	Chronicity of knee pain		
	Less than 3 months	3 months or more	Total
Non-severe	15.9%	8.2%	24.1%
Severe	5.6%	17.1%	22.7%
Total	21.5%	25.3%	46.8%

Table 1.3 Proportion of sample of 6,792 adults 50 years and over reporting knee pain in the past year by chronicity of knee pain and severity of knee problem <sup>11</sup>

The overall one year period prevalence of chronic knee pain (clinical knee OA) was 25.3% with 68% of this group reporting severe problems.

### 1.3.2.2 In the hand

A community survey, undertaken in 2002 in the registered populations of three general practices in the UK of 11,309 adults aged 50 years and over assessed the prevalence of clinical hand OA. <sup>37</sup> Participants were asked if they had had hand pain in the past 12 months and those reporting hand pain were asked to report the duration of their hand pain. Among the 7,878 participants who responded, 3,449 (43.7%) reported hand pain in the past 12 months. Data on duration were obtained for 2,088 participants with hand pain, and 60.5%

<sup>d</sup> The WOMAC index contains five items on pain and 17 on physical function, with item responses for “none”, “mild”, “moderate”, “severe” and “extreme” <sup>36</sup>.

reported that they had experienced three months or more hand pain in the past year. Given that the latter group were representative of all older people with hand pain, the prevalence of clinical hand OA in older adults was of the order of 26%.

An earlier community survey undertaken between 1990 and 1993 in the Netherlands of adults aged 55 years and over assessed 3,906 participants for the presence of hand pain (left or right) in the last month and asked how long this pain had lasted for.<sup>38</sup> 16.8% of all participants reported pain in either or both hands in the previous month, and, for those reporting pain in the right hand, 97% had had pain for more than one month (duration of pain greater than one month in left hand was not reported in the paper). The lower prevalence of hand pain in this survey probably arises from restricting the enquiry to hand pain in the previous month.

### **1.3.2.3 In the hip**

A community survey of adults aged 65 years and over undertaken in the UK in 2002 investigated the prevalence of hip pain.<sup>12</sup> Participants were asked “During the past 12 months have you had pain in or around your hips on most days for one month or longer?” Questionnaires were mailed to 5,039 older adults and a response was received from 3,341 participants (66.3%), of whom 19.2% (95% confidence interval (CI) 17.9% - 20.6%) reported hip pain for one month or more in the previous year.

A subsequent community survey of adults aged 50 and over undertaken in the UK and published in 2004 investigated the prevalence of hip pain.<sup>39</sup> Participants were asked “In the past 4 weeks have you had pain that has lasted for one day or longer in any part of your body?”, and those who responded positively were asked to shade in a manikin to indicate



the site of the pain. Questionnaires were sent to 11,230 older adults and 7,878 completed questionnaires were received (response 70.2%). The prevalence of hip pain in the past month in the age groups reported was: 25.8% (50-59 years), 28.3% (60-69 years), 27.0% (70- 79 years), and 25.6% (80+ years).

**In summary**, from these studies it is evident that estimates of the prevalence of clinical OA of the knee, hip and hand are similar and that a UK GP should expect each to be present in about a quarter of older adults registered with the practice. The question then arises as to the proportion of older adults who have OA at any of these sites. Is it simply additive, with three-quarters of older adults having clinical OA, or is there some overlap with individuals having more than one joint site affected? The next section summarises work which helps answer this question.

#### **1.3.2.4 In the person (in an individual with OA in either the knee, hip, hand or foot, or a combination of these)**

A secondary analysis by Thomas et al <sup>40</sup> of community surveys of adults aged 50 years and over undertaken in the UK has provided further estimates of the prevalence of OA at the three sites described above, and at the foot, and an estimate of the prevalence of “the person with OA”. Knee, hip, hand or foot OA was defined as joint pain at the relevant site for three months or more in the past year. A “person with OA” was defined as an adult 50 years and over who met the definition of OA at one or more of the four sites. Such a person could have an increasing amount of OA: in only one of the four sites, in any two sites, in any three, or in all of them. Prevalence estimates were reported for overall prevalence of older people with OA – older people with OA at any of the sites – and for the subgroups of older people

with increasing amounts of OA, OA at: i) two or more sites, ii) three or more sites, and iii) all four sites.

Questionnaires were mailed to 26,100 older people of whom 18,474 returned a completed questionnaire. The prevalence estimates for the individual sites and for the person with OA are shown in table 1.4

OA at joint site				Person with OA			
Knee	Hand	Hip	Foot	OA in one or more sites	OA in two or more sites	OA in three or more sites	OA in all four sites
30.7%	26.5%	19.2%	23.2%	53.2%	28.8%	13.4%	4.2%

Table 1.4 Prevalence of OA by joint site and by the person in adults aged 50 years and older

The prevalence estimates for individual site OA are of similar magnitude to those from studies reported above (in sections 1.3.2.1/2/3): i.e. about a quarter of older adults have OA at each site. But from this survey the figures illustrate a slightly higher proportion for clinical knee OA and a slightly lower one for clinical hip OA.

The estimates for the person with OA are illuminating: suggesting that about 50% of older adults have OA in at least one joint, about 30% in two or more joints, about 13% in three or more joints and about 4% have OA in all four joint sites.

From these studies illustrating the prevalence of clinical OA in older adults, set in the context of global estimates of OA, the burden of OA in UK general practice is becoming clearer:

- About a half of older adults have clinical OA in at least one of the four joint sites (knee, hip, hand, foot)
- Each of the joint sites are affected in about a quarter of older adults (slightly greater for knee and less for hip)
- A significant minority have clinical OA in two, three or even four joints.
- About two-thirds of people with clinical knee OA report severe problems

Given this level of burden what impact might this have for the patients on a GP's registered list?

### **1.3.3 The impact of OA on peoples' lives**

The impact of OA can be described in terms of disability, which encompasses the WHO domains of activity limitation and participation restriction, and described in the words of people with OA. Globally the impact of OA is high and has been estimated to account for about 3% of the total global of years living with disability and, with increasing life-expectancy, is predicted to be the fourth leading cause of disability by 2020.<sup>30</sup>

#### **1.3.3.1 Prevalence of older adults with disability due to OA**

Peat et al<sup>33</sup> in their review of the community burden of knee OA included studies which reported on restriction of daily activity, and estimated that, of the 25% of adults aged 50 years and over with knee OA, about half reported some associated disability.

Thomas et al<sup>40</sup> in their study on "OA in the person" used one question to assess disability: a single item from the Medical Outcomes Study Short Form 12<sup>e</sup> ['During the past 4 weeks,

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<sup>e</sup> The Medical Outcomes Study Short Form 12 is a multi-item questionnaire designed to measure "functional health and wellbeing from the patient's perspective" and can be used for any age or disease.<sup>41, 42</sup>

how much did pain interfere with your normal work (including both work outside the home and housework?)’]. Responses were dichotomised: pain interference (responses - moderately, quite a bit or extremely) and no pain interference (responses - not at all or a little bit). Disabling OA was defined at the level of the joint site:

- knee, hip, hand or foot pain lasting three months or more in the past 12 months plus the presence of pain interference

And at the level of the person:

- pain lasting three months or more in the past 12 months in one or more of the four joint plus the presence of pain interference

Table 1.5 shows the estimated prevalence of disabling OA by joint site and the person.

Disabling OA at joint site				Person with disabling OA			
Knee	Hand	Hip	Foot	OA in one or more sites	OA in two or more sites	OA in three or more sites	OA in all four sites
15.0%	12.6%	10.8%	11.7%	21.9%	15.7%	9.0%	3.3%

Table 1.5 Prevalence of disabling OA by joint site and by the person in adults aged 50 years and older

The estimated prevalence of disabling OA at the knee was 15.0%, similar to that reported by Peat et al,<sup>33</sup> with similar, but slightly lower, levels of disabling OA at the other joint sites. Comparing these estimates of disabling OA with the estimates of OA from the same study, presented in table 1.4 above, suggests that for each joint site about half those with OA reported disabling OA. This is true in part for the estimates of the prevalence of OA in the

person: about half of those with OA in one or more sites, or in two or more sites, report disabling OA. However, for those with OA in three or more sites, or in all four sites, the proportion with disabling OA increases to about three-quarters.

#### **1.3.3.2 Reported personal experience of OA**

The prevalences presented in the previous section estimate the proportion of older people who are adversely affected by OA but do not tell us how people are affected. Qualitative research methodologies are used to answer the “how” question and involve the analysis of in-depth interviews with selected samples of people. Analysis involves detailed coding of the interview data to identify themes in the data and the use of interview quotes to illustrate themes.<sup>43</sup>

The reported personal impact of OA varies greatly. A study which interviewed people who regarded themselves as well despite their OA reported that in this group physical activity was not restricted, particularly as there was a desire to keep moving to keep stiff and painful joints mobile.<sup>44</sup> A qualitative study nested in the population survey of older adults with knee pain conducted by Jinks et al,<sup>11</sup> and described in section 1.3.2.1 above, interviewed a broader spectrum of people with joint pain.<sup>9</sup> Excerpts from interviews quoted in the paper clearly illustrate the impact of OA for individuals with knee pain (box 1.2).

"I mean, if I sit too long, that doesn't help either. But the worst part is if I'm asleep and my legs are bent and I haven't woke up, the pain, I can't tell you what it is like. I can not move it...and what I do is I grip both hands round the knee and try to force my leg straight and I break out in a hot sweat. All I can say is that it is a bony pain. I could shout out with the pain."

"When it first happened [knee pain], I couldn't put weight on my foot. It was horrible. I can't tell you what it was like. Really really severe....painful; absolutely painful. I used to walk a lot, that stopped me from walking, but now I'm walking again so that's better isn't it?" I thought I'd be a cripple for life. I couldn't see it going. I couldn't see what would make it go, but physio helped and those tablets helped."

"...if I'm 54 now, another 10 years, you know, am I going to be back to square one? Is it worth going through all that? It depends on how you feel: oh, yes, again, with me 'down' a bit. I'm going to go [to the doctor] and another time I say: Oh, I can cope with it."

"Had some pain and stiffness in my knees later in the day when squatting/stooping down for a short while looking in a low cupboard – pain was around the knee joint. This faded away when I stood up and flexed the joint – getting erect was a struggle. I find this frustrating at times, but accept it as one of the disadvantages of growing old."

Box 1.2 Quotations illustrating the impact of OA on the individual with knee pain <sup>9</sup>

**In summary**, data on community prevalence and impact of clinical OA indicate that clinical OA is a highly prevalent, symptomatic condition in older people and in some a disabling condition, and a GP should expect that of the older patients they care for:

- About 50% have clinical OA in at least one joint site (knee, hip, hand or foot)
- About 30% have clinical OA at two or more sites, 13% at three or more and 4% in all four
- About 25-30% have clinical OA of the knee, 20-25% of the hip, 25% of the hand and 25% of the foot
- About 50-75% of those with clinical OA will have disabling OA, the proportion disabled rising with the number of joint sites affected

This is a significant burden of illness and impacts on many people's lives, and sets primary care and, relevant to this thesis, general practice with the challenge of providing care for this group of patients.

## **1.4 OA consultation prevalence in general practice**

In general practice, care is delivered when a patient consults and these consultations are recorded, as a part of good professional practice, in the patient's medical record. Recording the reason for attendance, either the presenting problem or the diagnosis made, is also good professional practice and the use of this routinely recorded data, now routinely recorded, and coded, electronically, <sup>45, 46</sup> can be used to describe service provision in general practice. Specifically for this thesis it can be used to determine the proportion of older adults who have consulted about OA and how regularly they have consulted.

Analysis of data routinely collected in 12 practices in North Staffordshire, in which over 95% of face-to-face consultations are coded with a reason for attendance,<sup>45</sup> has provided estimates that can reasonably be extrapolated as a picture of care given in UK general practice.<sup>47, 48</sup>

The reason for attendance is coded with the use of Read codes<sup>f 49</sup> a hierarchical system of morbidity and process codes. When coding the reason for attendance, a disease code such as “Knee Osteoarthritis” may be chosen if the coder is confident enough to make a definitive diagnosis, or a symptom code such as “Knee Arthralgia” may be selected when there is diagnostic uncertainty and simply the presenting symptom is coded. Grouping of Read codes, for example all codes which can be used to code a consultation relating to OA, has been undertaken at the research centre at Keele University to enable consultation prevalence estimates for conditions, or groups of conditions, to be determined. Consultation prevalence is defined as the number of people who consulted at least once with a relevant Read code over a given period of time per 10 000 registered patients. The data from the 12 North Staffordshire practices are stored in the Consultations in Primary Care Archive (CiPCA)<sup>g</sup> and are age and gender standardised to the UK population to provide estimates for a typical UK practice of 10,000 registered patients.

Analysis of the CiPCA database showed that musculoskeletal problems are second only to respiratory problems as the reason for consultation in general practice: 2100 of all patients

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<sup>f</sup> Read codes were developed by Dr James Read and are a coded thesaurus of coded terms which are widely used in UK general practice and are now maintained by the UK Health and Social Care Information Centre. URL: <http://systems.hscic.gov.uk/data/uktc/readcodes> (accessed October 2014)

<sup>g</sup> CiPCA is an archive of coded data from 12 research active practices in North Staffordshire which are known to have high levels of consultation coding. Data has been collected from these practices for 12 years on all consultations which occurred over that period.<sup>45</sup> URL: <http://www.keele.ac.uk/pchs/disseminatingourresearch/newslettersandresources/bulletins/> (accessed October 2014)



registered with a typical UK practice of 10,000 patients consulted annually for musculoskeletal problems compared with 2800 for respiratory problems.<sup>50</sup> The importance of musculoskeletal, and respiratory, problems in day-to-day general practice has been confirmed in a larger database of general practice consultations held by the Royal College of General Practitioners Research and Surveillance Centre<sup>h</sup> in which, for the years 2001 to 2007, musculoskeletal problems were consistently second only to respiratory problems as the most frequent reason for which patients consulted.<sup>14</sup>

These 2100 patients who consulted annually with musculoskeletal problems, resulted in 4,400 consultations - 12% of all consultations undertaken annually in a typical UK practice. In patients 50 years and over, the proportion who consulted annually with musculoskeletal problems rose to 31%, equivalent to 1,180 patients in such a UK practice, and patients in this age group accounted for over half of the total number of patients who consulted for musculoskeletal problems.

Further analysis of CiPCA data has determined that for a typical UK practice (of 10,000 patients) 180 patients annually had a diagnosis of OA recorded in a consultation at least once (2% of the practice population), and of these 170 were aged 50 years and over (4% of practice population aged 50 years and over). Some of these patients consulted more than once about OA, resulting in 300 consultations per year about OA, which made up 5% of all musculoskeletal consultations.

However, this is in all probability an underestimate of the number of patients who consulted their GP for OA. First many GPs use symptom codes, such as “knee pain” or “hip arthralgia”,

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<sup>h</sup> The RCGP Research and Surveillance Centre extracts data from 100 practices throughout England and Wales, and provides prevalence reports on consultations by diagnosis.<sup>51</sup>

when coding consultations with older adults presenting with knee, hip hand or foot pain, and in this age group these symptoms are probably related to OA.<sup>52</sup> Second many patients with OA report that they do not consult on an annual basis: estimates from community studies found that 33% of older people with knee OA reported consulting their GP in the previous year for the problem but 77% reported ever consulting the GP for the problem.<sup>11, 53</sup> This suggests that a broad set of Read codes over a longer time frame than a year needs to be utilised in determining the number of people with OA who seek help from their GP.

In a report entitled “Osteoarthritis in General Practice”, produced and published by Arthritis Research UK,<sup>54</sup> CiPCA data was used to estimate the number of older people with OA who consulted their GP, using both a longer timeframe (seven years) and a broad set of codes (both disease and symptom codes relating to OA) to define OA consultation. The number of people who consulted with OA was defined as those:

“aged 45 years and over given a diagnosis of osteoarthritis, or recorded as having symptoms, predominantly pain, in one of four main joint regions (knee, hip, hand/wrist, foot/ankle), in the absence of a record of another diagnosis (fracture, infection, gout, rheumatoid arthritis) for these symptoms”, during at least one consultation for the seven years from 2004 to 2010.

A seven year timeframe was used to capture people who consulted infrequently, in addition to those who consulted annually, and has been shown to be a sufficient length of time to use to identify at least 80% of people who will have ever consulted with a musculoskeletal

condition.<sup>48</sup> The number of older people who consulted with OA, in a typical UK practice with 10,000 registered patients is shown in table 1.6.

<b>Number (%) of older people who consulted with osteoarthritis (OA) over a seven year period per 10,000 registered patients aged 45 years and over</b>				
Any OA	Knee OA	Hip OA	Hand OA	Foot OA
3340 (33%)	1797 (18%)	808 (8%)	597 (6%)	677 (7%)

Table 1.6 Number of older people consulting with OA in a typical UK general practice of 10,000 patients<sup>54</sup>

A related study compared one and seven year consulting prevalence of OA in England.<sup>48</sup> OA consultations were defined in three ways, those coded with: a) an OA disease code, b) a joint pain code (in people 45 years and over), and c) either (a) or (b). Consultation prevalence was defined as above (see this section page 20) and was presented as a percentage of the registered patients aged 45 years and over. The one- and seven-year period consultation prevalence for the three definitions for England is given in table 1.7.

<b>Period consultation prevalence as a % people aged 45 years and over</b>					
<b>One year period</b>			<b>Seven-year period</b>		
OA	Joint pain	OA or joint pain	OA	Joint pain	OA or joint pain
3.8%	7.9%	10.7%	12.5%	28.5%	33.6%

Table 1.7 One- and seven-year period consultation prevalence for OA, joint pain and OA or joint pain in registered patients aged 45 years and over

The one-year prevalence for OA increased from 3.8% for OA coded consultations through about 8% for joint pain coded consultations to about 11% for consultations coded with either

OA or joint pain codes. This confirms that GPs frequently code joint pain in older adults with symptom and not disease codes. The seven-year prevalences were higher again with about 34% of older adults consulting over a seven-year period for OA coded as the disease or with the presenting symptom.

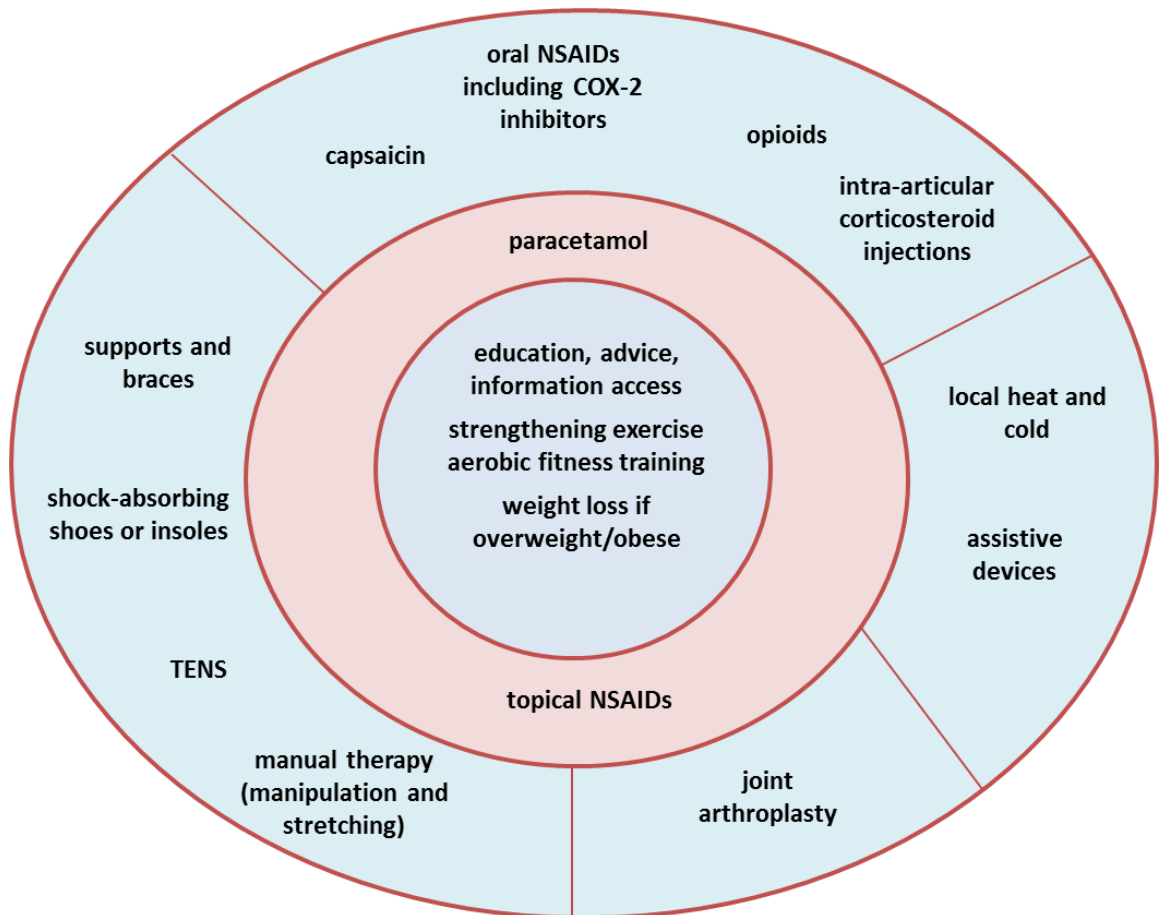
**In summary**, in UK general practice, it is estimated that about 34% of older adults have consulted their GP about OA over a seven-year period but only about 12% consulted in the previous year. This suggests that, although a large proportion of the 50% of older adults with OA do consult their GP for the problem, many only consult infrequently.

## **1.5 Recommended care for people with OA**

Guidelines for the management of OA have been published in the UK by NICE in 2008 and revised in 2014 <sup>1, 2</sup> and in the USA by the American College of Rheumatologists in 2012. <sup>55</sup> International professional bodies have also published guidance: the European League Against Rheumatism (EULAR) for knee OA in 2003, <sup>28</sup> for hip OA in 2005, <sup>29</sup> for hand OA in 2007 <sup>56</sup> and for the non-pharmacological treatment of hip and knee OA; <sup>57</sup> the Osteoarthritis Research Society International (OARSI) for hip and knee OA in 2010. <sup>58</sup>

The 2008 NICE Guideline on the care of people with OA is the most relevant of these guidelines for this thesis since it is a national guideline aimed primarily at GPs working in England and current at the time this PhD study was carried out. As described above (see section 1.2.3, page 5), the guideline recommended that a working diagnosis of OA could be made clinically and that radiological or laboratory investigations are not needed to make or confirm the diagnosis, but the guideline stated that, in making the diagnosis, conditions such as rheumatoid and psoriatic arthritis, ankylosing spondylitis and gout should be excluded.

A holistic assessment of the person with OA was recommended: an assessment of activity limitation, participation restriction, mood, sleep, ideas and concerns about OA, expectations for treatment, current and previous treatments used and self-care measures being used. The recommended management of OA was presented as a target diagram (figure 1.1) comprising: core treatments in the centre which should be offered to all people with OA, treatments which should be used as first-line analgesia in the first ring, and treatments which should be offered to those with ongoing pain or disability in the outer ring.



Starting at the centre and working outwards, the treatments are arranged in the order in which they should be considered, taking into account individuals' different needs, risk factors, and preferences. The core treatments (centre) should be considered first for every person with osteoarthritis. If further treatment is required, consider the drugs in the second circle before the drugs in the outer circle. The outer circle also shows adjunct treatments (both non-pharmacological and surgical), which have less well proved efficacy, provide less symptom relief, or increased risk to the patient compared with those in the second circle.

Figure 1.1 Interventions recommended for the management of OA (adapted with permission from Conaghan et al 2008<sup>1</sup>)

Three core treatments were recommended: i) accurate verbal and written information on the nature and treatment of OA, ii) advice on exercising to strengthen muscles and on increasing physical activity, and if appropriate iii) interventions to effect weight loss. Paracetamol and topical nonsteroidal anti-inflammatory drugs (NSAIDs) were recommended for first line analgesia. For those with ongoing problems, a number of further options were recommended: non-pharmacological approaches (such as local heat and cold, shock absorbing shoes and assistive devices), pharmacological interventions (such as, capsaicin,

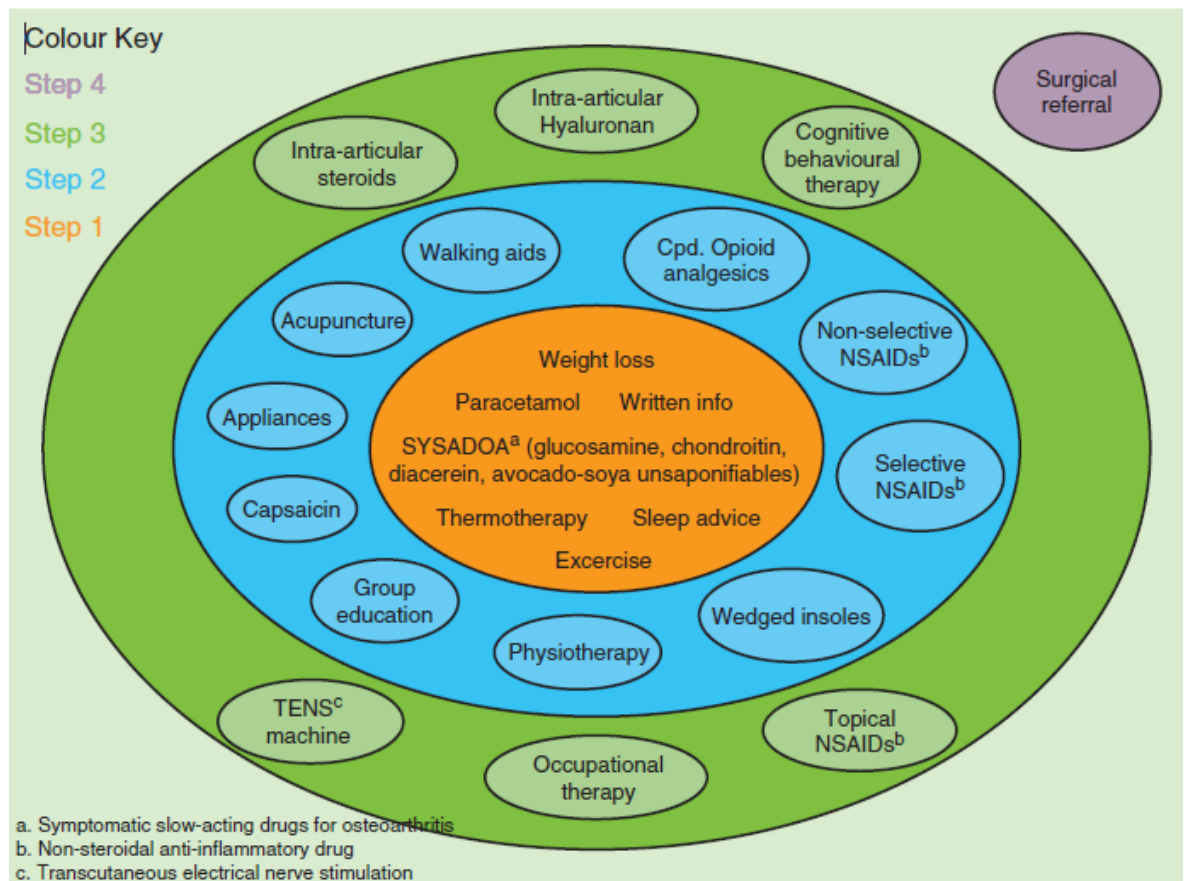
oral NSAIDs and intra-articular steroids) and surgical referral for consideration of arthroplasty.

**In summary**, the 2008 NICE OA Guideline provided a model for the management of OA: it identifies the interventions which should be offered in a schema which depicts the order in which they should be offered or considered.

## **1.6 Current care for people with OA**

It is well known that publishing guidance on best practice does not guarantee the guidance will be acted upon by clinicians <sup>59</sup> and that it is important therefore to find out whether the guidance is being followed. This has been investigated in the studies described in this section <sup>53, 60, 61</sup>.

In a study, to investigate the use of interventions recommended for the treatment of knee OA in older adults with chronic knee pain, a model of care for its treatment was developed. It consisted of 26 interventions recommended at the time of development (June 2004) for the treatment of knee OA arranged in a four step model (figure 1.2). <sup>62</sup> In this stepped-care approach, interventions in step 1 are those which should be considered for all people with knee OA. Interventions in steps 2, 3 and 4 are considered for those with ongoing pain or disability despite use of interventions from previous steps. The use of these interventions was investigated in an interview study of 200 older people (aged 50 years and over) with chronic knee pain conducted in 2004. <sup>53</sup>



Step 1 interventions to be offered to all knee pain sufferers (aged 50 years and over). Step 2/3/4 interventions to be considered if there is persisting pain or disability despite use of interventions from lower steps

Figure 1.2 Consensus stepped model of care for the treatment of knee pain in adults aged 50 years and over (adapted with permission from Porcheret et al 2007 <sup>62</sup>)

Of the core treatments recommended in the NICE 2008 OA Guideline, only 16% of those interviewed had ever used written information about OA in managing their condition, 46% had ever tried exercise to help the problem, and 39% had ever tried to lose weight. The reported use of pharmacological agents was in the main higher than for “core treatments”: paracetamol (71% ever used), compound opioid analgesics such as co-codamol (53%), oral nonselective NSAIDs such as naproxen (53%), and topical NSAIDs (42%). The use of these interventions was not only a consequence of advice from a healthcare professional, but in many instances was self-initiated or on the recommendation of a friend or relative. For example, paracetamol was initiated by the participant themselves in 53% of instances,



exercise 68% of instances, topical NSAIDs 75% of instances, and written information 68%. The conclusion from this study was that many interventions recommended for the treatment of knee OA were not being used by people with the condition, particularly non-pharmacological treatments, and interventions were often initiated by the participant even though they had sought help from a healthcare professional early on in the course of the problem.

A national UK interview survey of adults aged 50 years and over, undertaken in 2004-5 as part of the English Longitudinal Study of Ageing (ELSA), investigated the extent to which care had been received for 14 conditions including OA.<sup>60</sup> Four quality indicators for OA were developed (box 1.3) and participants at interview who reported a diagnosis of OA were asked a set of questions to determine if they had received the indicated care.

1. IF an ambulatory person aged 50 or older has had a diagnosis of symptomatic osteoarthritis of the knee for longer than 3 months and has no contraindications to exercise and is physically and mentally able to exercise, THEN a directed or supervised strengthening or aerobic exercise programme should have been prescribed at least once.
2. IF an ambulatory person aged 50 or older has a diagnosis of symptomatic osteoarthritis, THEN education regarding the natural history, treatment and self-management of the disease should be offered at least once.
3. IF oral pharmacological therapy is initiated to treat osteoarthritis among people aged 50 or older, THEN paracetamol should be the first drug used, unless there is a contraindication to use.
4. IF a person aged 50 or older with severe symptomatic osteoarthritis of the knee or hip has failed to respond to non-pharmacological and pharmacological therapy, THEN the patient should be offered referral to an orthopaedic surgeon to be evaluated for total joint replacement within 6 months unless surgery is contraindicated.

Box 1.3 OA quality indicators developed by Steel et al (adapted with permission from Steel et 2008<sup>60</sup>)

In the study 8,688 participants were interviewed of whom 326 (4%) reported a diagnosis of knee OA and were eligible for the first OA quality indicator. The numbers eligible for each quality indicator and the number and percentage for whom the quality indicator was met is shown in table 1.8.

<b>OA quality indicator</b>	<b>Number participants eligible for quality indicator</b>	<b>Number (%) eligible participants in whom the quality indicator was met</b>
1. Exercise for knee OA	326	83 (26)
2. Education for OA	256	46 (18)
3. Paracetamol used first for OA	254	102 (40)
4. Surgical referral for severe hip or knee OA	157	57 (36)

Table 1.8 Number of participants eligible for OA quality indicators and number in whom indicator met (adapted with permission from Steel et al 2008 <sup>60</sup>)

The proportion of eligible participants prescribed an exercise programme was low (26%), and less than found for the use of exercise for OA in the interview study described above (46%). <sup>53</sup> This may have been a consequence of the narrower criterion adopted in the ELSA study (the prescription of a directed or supervised exercise programme). The proportion offered education was also low (18%) and comparable with the findings from the interview study (16%). <sup>53</sup> In only 40% of people with OA was paracetamol used before other oral drugs, and in only 36% of people with severe hip or knee OA in whom conservative therapy had failed was a surgical referral offered.

A more extensive set of OA quality indicators (box 1.4) was developed for a study which assessed the quality of primary care for OA by a review of medical records. <sup>61</sup>

QI number	Quality indicator (QI)	Source
<b>Information provision indicators</b>		
1	The percentage of patients with symptomatic osteoarthritis, whose notes contain a record that they have been offered education regarding the natural history, treatment, and self-management of the disease at least once	RAND
2	The percentage of patients with osteoarthritis treated with an NSAID, whose notes contain a record that they have been advised of the gastrointestinal and renal risks associated with this drug	RAND
<b>Regular assessment indicators</b>		
3	The percentage of patients treated for symptomatic osteoarthritis, whose notes contain a record that they have been assessed for functional status in the last year	RAND
4	The percentage of patients treated for symptomatic osteoarthritis, whose notes contain a record that they have been assessed for degree of pain in the last year	RAND
5	The percentage of patients with osteoarthritis regularly treated with an NSAID, whose notes contain a record that they have been asked about gastrointestinal symptoms within the previous 12 months	RAND
<b>Treatment provision indicators</b>		
6	The percentage of patients in whom oral pharmacological therapy was initiated to treat osteoarthritis, whose notes contain a record that they were offered paracetamol first (unless contraindicated)	RAND QIGP
7	The percentage of patients with osteoarthritis treated with an NSAID, whose notes contain a record that ibuprofen (or a cox-2 inhibitor) has been considered for first-line treatment (unless contraindicated or intolerant)	NICE QIGP
8	The percentage of patients with severe symptomatic osteoarthritis of the knee or hip that has failed to respond to non-pharmacological and pharmacological therapy, whose notes contain a record that they were offered referral to an orthopaedic surgeon to be evaluated for total joint replacement within 6 months unless surgery is contraindicated	RAND
9	The percentage of patients in whom oral pharmacological therapy was changed from paracetamol to a different oral agent, whose notes contain a record that they were offered a trial of maximum-dose paracetamol	RAND
<i>RAND = RAND health indicators adapted for the UK.<sup>12</sup> QIGP = Quality Indicators for General Practice.<sup>13</sup> NICE = National Institute for Health and Clinical Excellence.<sup>11</sup> NSAID = non-steroidal anti-inflammatory drug.</i>		

Box 1.4 Quality indicators for the treatment of OA in primary care (taken with permission from Broadbent et al 2008 <sup>61</sup>)

The general practice records of 320 patients aged 55 years and over with a diagnosis of OA or arthralgia in the records randomly selected from 18 practices in Norfolk (between 20 and 40 patients with OA per practice) were reviewed to assess recorded care against the nine indicators in box 1.4. Both coded data and free-text entries were used to assess care. The review took place in two waves, one in 2003 and one in 2005.

The findings are shown in table 1.9.

<b>OA quality indicator</b>	<b>Number participants eligible for quality indicator</b>	<b>Number (%) eligible participants in whom the quality indicator was met</b>
1. Education for OA	318	96 (30)
2. NSAID risks explained	198	33 (17)
3. Functional assessment in last year	319	137 (43)
4. Pain assessment in last year	319	85 (27)
5. NSAID* side effects asked about in last year	113	34 (30)
6. Paracetamol used first for OA	268	129 (48)
7. Ibuprofen (or cox-2 inhibitor) considered for first-line in NSAID* treatment	196	116 (59)
8. Surgical referral for severe hip or knee OA	123	111 (90)
9. Maximum-dose paracetamol before changing from paracetamol	61	3 (5)

Table 1.9 Number of participants eligible for OA quality indicators and number in whom indicator met (adapted with permission from Broadbent et al 2008 <sup>61</sup>)

\* Non-steroidal anti-inflammatory drug

Comparing these results with those from the studies presented above, a slightly higher proportion of people with OA had been offered education (30% compared with 16% (Porcheret) and 18% (Steel), and paracetamol was used in a similar proportion before other oral drugs (48% compared with 40% (Steel). The proportion offered a surgical referral was much higher in this study assessing medical records (90%) than in the study by Steel et al using patient self-report (36%), possibly because this event is better recorded by the GP than it is recalled by the patient. Other indicators were in the main met in less than 50% of instances, which suggests suboptimal care for these indicators but may reflect suboptimal recording of care.

**In summary**, these three studies, all undertaken before the 2008 NICE OA Guideline was published, provide a baseline assessment of quality of primary care for OA prior to any effect of the guideline. The results suggest that overall the level of primary care for OA was sub-optimal and indicate that a gap existed between what is recommended in the 2008 NICE OA Guideline and clinical practice. Specifically in general practice, where care is delivered during consultations between GPs and people with OA, the results suggest that such consultations were sub-optimal. One option to address this situation would be to undertake research on how best to bridge the OA “evidence into practice” gap, and specifically to investigate how best to enhance consultations about OA in general practice.

### **1.7 The Managing Osteoarthritis in Consultations (MOSAICS) trial**

The MOSAICS trial is a cluster randomized control trial to investigate the acceptability, feasibility and effectiveness of implementing the 2008 NICE OA Guidelines <sup>1</sup> in general practice. <sup>63</sup> Eight local general practices were recruited and agreed to be randomised to either intervention or control arm of the trial – four practices in each arm. The key elements of the trial relevant to this thesis are represented diagrammatically in figure 1.3 and were:

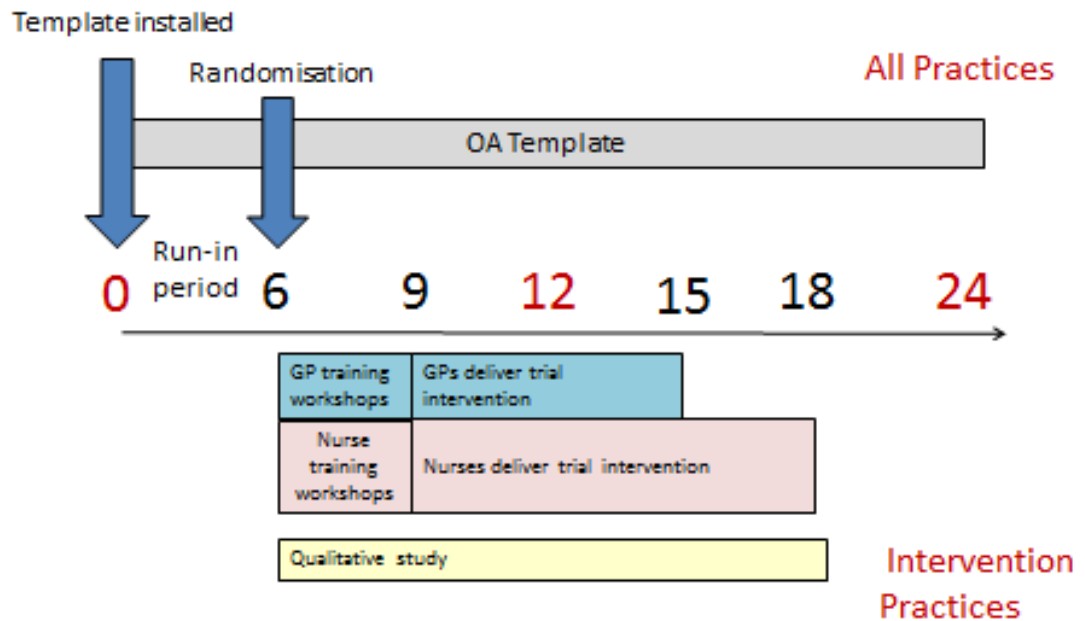


Figure 1.3 Diagram of the activities relevant to the thesis undertaken in the MOSAICS trial

- A six-month run-in period prior to randomisation to observe usual current care for OA in all eight practices (intervention and control).<sup>63</sup>
- Installation of an “OA template”<sup>i</sup> in all eight practices at the start of the run-in period to enable coded recording of care undertaken by practice staff during consultations with older patients with OA.<sup>63</sup> The template prompted for ten aspects of OA care to be recorded (box 1.5).
- Randomisation of practices to either intervention or control arm
- GP and nurse training workshops on delivering the trial intervention

<sup>i</sup> Templates are a method of facilitating coded data entry and can be automatically fired when a morbidity code is entered as the problem title of a consultation<sup>64</sup>

- An intervention delivery phase: delivery of the trial intervention in intervention practices, usual care in control practices, and continued use of the “OA template” in both intervention and control practices
- A questionnaire mailed to patients presenting with peripheral joint problems during the trial delivery phase to ascertain patient reported outcomes in both arms of the trial
- A qualitative study in which GPs and nurses in the intervention arm practices were observed in meetings with the research team, and interviewed after they had attended training workshops and after the trial intervention delivery period
- Trial outcome measures included patient reported pain and disability, quantitative analysis of template data and thematic analysis of observational and interview data.

Prompt	Result	Date	Last Recorded Entry
Pain score	Pain Moderate	2.3.2012	Pain score -----
Function Impact	Fn Moderate Limitati	2.3.2012	Function Impact -----
O/E - weight	80 Kg	2.3.2012	O/E - weight -----
Body mass index			Body mass index -----
Paracetamol Use		2.3.2012	Paracetamol Use -----
Topic Nsaid Use			Topic Nsaid Use -----
Oa Info Given			Oa Info Given -----
Advice - weight			Advice - weight -----
Exercise Advice			Exercise Advice -----
Physio Advised			Physio Advised -----

A Para|Tried Full Dose  
 B Para|Advised Full Dose  
 C Para|Decline Full Dose  
 D Para|Not Appropriate  
 E Para|Unknown

Select option <PgUp> for all past data

Box 1.5 – Screen shot of MOSAICS template as displayed in the patient’s electronic health record

The trial intervention was aimed at older adults presenting to their GP with peripheral joint pain. It consisted of three components: i) an initial consultation with a GP followed by, ii) up to four appointments with a practice nurse in an OA clinic, with iii) an OA Guidebook (appendix 7.7 page 392) to support care (figure 1.4).

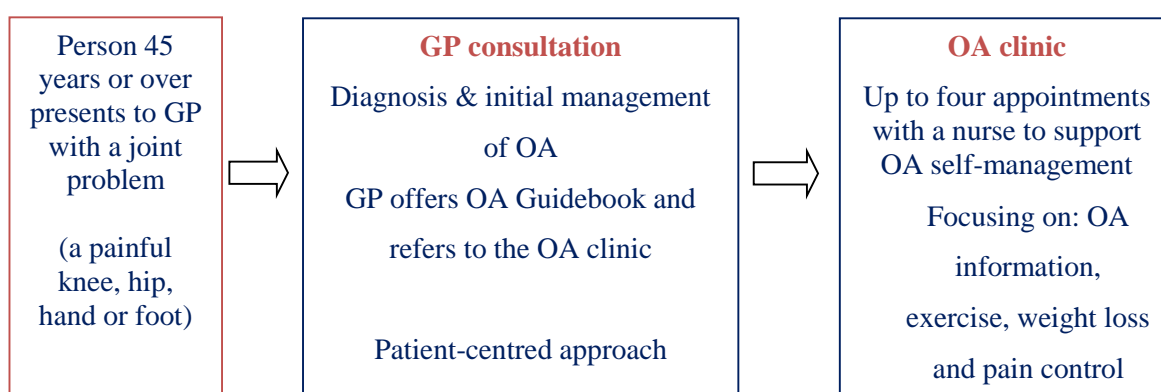


Figure 1.4 Summary of the delivery and components of the MOSAICS trial intervention

The trial intervention, taken as a whole, was designed to operationalise three aspects of care for OA in general practice:

1. The three core treatments of the NICE 2008 OA Guideline – verbal and written information, advice to exercise and increase physical activity, interventions to achieve weight loss
2. The NICE 2008 OA Guideline recommendations for first-line analgesia – paracetamol and topical NSAIDs
3. Support for the self-management of OA.

The MOSAICS trial was given ethical approval by the North West 1 Research Ethics Committee, Cheshire (REC reference: 10/H1017/76).



The topic of my thesis is the GP component of the trial intervention, and the thesis is concerned with developing the content of the GP consultation, and with how to “train” GPs participating in the trial to undertake the consultation for the duration of the trial

## **1.8 Conclusions and link to next chapter**

The conclusions from this chapter are summarised in box 1.6

- OA can be defined both radiographically and clinically but the clinical definition is predominantly used for diagnosis of OA in clinical practice
- OA is a highly prevalent condition in older adults often affecting several joint sites and is associated with significant disability
- People with OA seek help from their GP but are not seen in general practice on a regular basis, and often patients consult once and do not return
- National guidance for the management of OA exists which provides recommendations for best practice in general practice
- The care that people with OA receive is suboptimal when compared with that recommended in national guidance
- The aim of the MOSAICS study was to investigate the benefit of an approach to the management of OA in general practice based on NICE recommendations for OA care; the approach included the initial consultation between a GP and an older person presenting with peripheral joint pain.

### **Box 1.6 Chapter 1 conclusions**

Given, as presented above, that in general in the UK OA care currently delivered by GPs in consultations is not in line with recommended care and that the MOSAICS study would require GPs to undertake consultations designed to deliver OA care as recommended by NICE, GPs’ clinical practice for OA would need to be enhanced. Specifically the GPs participating in the trial would need to be able to undertake an enhanced initial consultation with an older person presenting with peripheral joint pain, henceforth for brevity termed an

“enhanced OA consultation”. And for most (if not all) trial GPs, this would require a change in their clinical practice.

The subject of the next chapter is a review of approaches for the task of changing clinical practice, and more broadly of changing behaviour in general, with the objective of selecting the approach to changing clinical practice to be used in this thesis to effect GP delivery of an enhanced OA consultation.

## **2 SELECTION OF APPROACH FOR CHANGING CLINICAL PRACTICE, AND AIM AND OBJECTIVES OF THE THESIS**

### **2.1 Objective**

To select the approach to be adopted for changing GP clinical practice, specifically the approach to effect GP delivery of an enhanced OA consultation.

### **2.2 Introduction**

The context and setting for the PhD study have been described in chapter 1. The conclusion from chapter 1 was that the delivery by GPs of an enhanced OA consultation would require a change in their clinical practice in this area. The question was how to effect such a change in practice: which approach to adopt? This chapter reports on the task of deciding which approach to select, in brief:

- The approaches advocated for changing clinical practice in relation to GP professionalism and by the evidenced-based medicine (EBM) community are reviewed and judged as not appropriate for this thesis
- The processes of diffusion, dissemination and implementation, as approaches to changing clinical practice, are reviewed, and implementation chosen as the most appropriate process for this thesis
- A framework on how to undertake implementation is presented and proposed as the appropriate approach to effect GP delivery of an enhanced OA consultation in this thesis

The rationale for the review of the literature was to enable an informed decision to be made, based on a comprehensive understanding of the field, about which approach to select. It was

not undertaken using systematic methodology and was undertaken in the context of time-limited preparatory work for the MOSAICS trial. The chapter concludes with the aim and objectives of the thesis.

## **2.3 Approaches for professionalism and evidence-based medicine**

Change in clinical practice is central to the professionalism of GPs and to the practice of EBM. The approaches to changing clinical practice advocated in these two contexts are reviewed in this section.

### **2.3.1 Clinical practice and professionalism**

The clinical practice of GPs in the UK, as of other UK medical doctors, is regulated by the General Medical Council (GMC),<sup>j</sup> which (in its “Good Medical Practice” publication<sup>65</sup>) lays out the principles and values to which doctors should work. The GMC requires doctors to demonstrate that they are fit to practise, through an annual appraisal system and the GMC’s revalidation process,<sup>66</sup> in order to continue to be licenced to practise in the UK. Domain 1 of the guidance covers knowledge, skills and performance, and included in this section is the duty of doctors: i) to keep their professional knowledge and skills up to date, and ii) to take steps to monitor and improve the quality of their work.

The Royal College of General Practitioners (RCGP),<sup>k</sup> which is the guardian of standards for GPs working in the UK and administers the membership of the RCGP exam (successful

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<sup>j</sup> The General Medical Council (GMC) is the statutory independent regulator of doctors in the UK. Its purpose is to “to protect, promote and maintain the health and safety of the public by making sure that doctors meet” the GMC’s “standards for good medical practice”. Taken from GMC website <http://www.gmc-uk.org> (accessed 03/07/2014).

<sup>k</sup> The Royal College of General Practitioners (RCGP) is the “professional membership body for family doctors in the UK and overseas... committed to improving patient care, clinical standards and GP training”. It provides support and resources for GPs to keep up to date and to demonstrate their fitness to practise. Taken from RCGP website <http://www.rcgp.org.uk/> (accessed 03/07/2014).

completion of which is required to obtain a licence to practise from the GMC), states in its GP Curriculum that a GP should participate in service management and improvement.<sup>67</sup> The statement on enhancing professional knowledge<sup>68</sup> states that GPs should be able to search for evidence on how best to manage conditions they see in practice and apply this to patient care. It is assumed that if relevant evidence was found, which was not previously known to the GP and which could be applied to the care of the GP's patients, then this would result in enhanced care: a change in clinical practice

In summary, from a professional perspective GPs have a duty to keep up to date and improve the quality of their work and, with the advent of revalidation for doctors, need to report on activities they are undertaking to achieve this.

### **2.3.2 Clinical practice and evidence-based medicine**

EBM has its origins in clinical epidemiology, and was developed in the 1970's and 80's as a "science for the art of medicine".<sup>69</sup> The underlying premise is that care of individual patients, such as making a diagnosis, providing a prognosis, and offering options for treatment, is better undertaken with knowledge from previously studying such aspects of care in groups of similar patients. For example, patient advice on benefit of treatment is based on knowledge of how treatment benefitted a group of similar patients when tested in a controlled manner. The insights from undertaking research in groups of patients provide "the evidence" which can be used to inform and enhance clinical practice. However, the evidence which this new science can provide was never intended to be used in isolation, and practising evidence-based medicine entails using the latest relevant research evidence in combination with professional skills and patient values to enhance care of individual patients.<sup>70</sup>

One of the challenges of practising EBM is how to keep abreast of all the latest research relevant to the individual's clinical practice, an almost impossible task with the ever increasing quantity of research evidence being published.<sup>70, 71</sup> An approach known as "just in time learning"<sup>70</sup> has been suggested as an answer to this problem. The task for the practitioner is not to read and assimilate all recently published research relevant to their field, but to decide what evidence is needed to inform day-to-day care of patients, find it, appraise it, and apply it.<sup>70</sup> It was hoped that clinical practice would be continually enhanced by practitioners regularly using their clinical encounters with patients to pose questions on what best practice might be for that patient (such as which is the best diagnostic test to use, or whether drug A or B is best for a certain outcome for their condition). They would find evidence to answer these questions, appraise the quality and relevance of this evidence, use the evidence to provide a clinical answer to the question, and apply it to the care of that patient. This process would not need to be repeated on every occasion as learning from questioning the care of a previous patient could be applied to subsequent patients with a similar problem.

### **2.3.3 Appropriate approaches for this thesis?**

Could these approaches be used in effecting GP delivery of an enhanced OA consultation? The answer was probably not. Professional motivation and the EBM approach in keeping up to date and changing clinical practice rely very much on the individual GP deciding on the area of clinical practice to focus on, and how to change it for the best. It would seem unlikely that these approaches would be sufficient to effect delivery of an enhanced OA consultation in a timely or standardised manner as would be required to deliver a sufficiently strong intervention for a randomised controlled trial.

## **2.4 The processes of diffusion, dissemination and implementation**

### **2.4.1 Introduction**

In EBM the individual approach described above is known as the “pull” approach,<sup>70</sup> in which practitioners “pull” evidence they need, as and when they need it, in order to better care for current patients. The opposite approach is the “push” one, in which practitioners attempt to keep up to date using new knowledge “pushed” at them: by reading journal articles and guidelines which they receive, or attending update courses and conferences. The “pull” approach is promoted for the practice of EBM as it provides answers for today’s clinical problems and does not rely on practitioners trying to remember evidence from an article or presentation from some while ago when caring for their current patients.

However, there are situations when a “push” approach is preferable to a “pull” one, such as when the uptake of an innovation has such benefit for patients that the process of practitioners individually incorporating it into their practice, as and when they identify the need to question their care, would be lengthy and result in many patients not benefiting from the innovation. There are many noteworthy examples of innovations which have merited a “push” approach, such as the uptake of hand washing by doctors and nurses,<sup>72</sup> the use of aspirin for secondary prevention in cardiovascular disease,<sup>73</sup> the use of preventer inhalers for asthma<sup>74</sup> and the use of the D-dimer test<sup>1</sup> in the diagnosis of deep vein thrombosis.<sup>75</sup>

Methods have been developed to study, enhance and facilitate this “push” approach: those relating to diffusion, dissemination and implementation. These three processes are part of a

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<sup>1</sup> “D-dimer test. D-dimer is a product formed in the body when a blood clot (such as those found in deep vein thrombosis (DVT) or pulmonary embolism (PE) is broken down. A laboratory or point-of-care test can be done to assess the concentration of D-dimer in a person's blood. The threshold for a positive result varies with the type of D-dimer test used and is determined locally. The result of the D-dimer test can be used as part of probability assessment when DVT or PE is suspected.” adapted from the NICE Clinical Guideline<sup>144 75</sup>

spectrum of processes which has been described in relation to adoption or uptake of new ideas or innovations. Greenhalgh et al described four processes in this spectrum: <sup>76</sup>

- Diffusion, the passive spread of change
- Dissemination, active efforts to persuade target groups to adopt an innovation
- Implementation, active efforts to mainstream an innovation within an organization
- Sustainability, making an innovation routine until it reaches obsolescence

The first three processes are relevant to this thesis, concerned with effecting change in clinical practice, and are discussed in the next sections, but consideration of sustainability is beyond the remit of this thesis.

### **2.4.2 Diffusion**

The seminal book on diffusion by Rogers was first published in 1962 with the 3<sup>rd</sup> edition published in 1983. <sup>77</sup> He describes diffusion as “the process by which an innovation is communicated through certain channels over time among the members of a social system”. The book reports on a range of studies which have sought to understand this process including a study on the uptake of hybrid corn by Iowa farmers between 1928 and 1941. The study, contrary to popular opinion, was not undertaken by Rogers but by Ryan and Gross, a professor of rural sociology and his research assistant. In 1941 they interviewed 259 farmers from two Iowa farming communities about when they had decided to adopt hybrid corn. The researchers were able to plot the rate of adoption by farmers over the previous 13 years, and categorised the farmers into innovators, early adopters, middle majority, late majority and laggards, terms which are still used in the context of diffusion today.



Rogers' model of diffusion <sup>77</sup> includes the concepts that:

- Ideas, or innovations, are messages which are spread (communicated) over time between individuals in a community who discuss them amongst themselves and decide whether to adopt the innovation or not
- Awareness of the innovation can be promoted by mass-media channels but the decision to adopt is made through talking to “near-peers”
- Some individuals are opinion leaders in the community, they have credibility with their peers and share the opinions and behaviour of the majority,
- When opinion leaders have adopted the innovation they act as a powerful influence on others to adopt, often through imitation
- The process takes time and a rate of adoption can be determined
- Certain characteristics of the innovation - relative advantage, compatibility (with prevalent societal values and norms), complexity, trialability (that it can be initially trialled on a small scale), and observability (that people can be seen to be doing it) – affect the rate of adoption
- The final decision to adopt can be made individually, collectively or because of pressure from others (those with power, status, or technical expertise)
- Change agents, in the example of the Iowa farmers these were the seed merchants, are part of the process and try to influence individuals to adopt the innovation.

In the opening sentences of his book <sup>77</sup> Rogers, states

“ONE REASON WHY THERE is so MUCH INTEREST in the diffusion of innovations is because getting a new idea adopted, even when it has obvious advantages, is often very difficult. There is a wide gap in many fields, between what is known and what is actually put into use. Many innovations require a lengthy period, often of some years, from the time when they become available to the time when they are widely adopted. Therefore, a common problem for many individuals and organizations is how to speed up the rate of diffusion of an innovation.”

Although Rogers’ work is purely descriptive, it does provide insights in to how to “speed up the rate of diffusion”. For many of the concepts in the diffusion model described above Rogers gave a description of how they correlate with the rate of diffusion:

- Observability of the innovation, having opinion leaders who have adopted the innovation, and higher social status of the change agent are positively correlated
- Complexity of the innovation is negatively correlated

It is the use of these and other insights which have been used in dissemination and implementation methods to speed up the adoption of innovations.

### 2.4.3 Dissemination

Dissemination was defined by Greenhalgh et al as “active and planned efforts to persuade target groups to adopt an innovation”.<sup>76</sup> Their definition does not specify how this would be carried out but this was discussed in their paper and by others:

- Greenhalgh et al categorise dissemination “efforts” as concerning formal and planned communication and influence, and suggest a planned dissemination program would consist of an analysis of “potential adopters’ needs and perspectives”, a tailored approach to different subgroups, an appropriately presented message and the use of appropriate communication
- In the Cochrane review on the effects of printed educational materials on professional practice and healthcare outcomes,<sup>78</sup> passive dissemination is defined as “the distribution of published or printed recommendations for clinical care including clinical practice guidelines, monographs, and publications in peer-reviewed journals, delivered personally or through mass mailing.”
- A health technology assessment on the effectiveness and efficiency of guideline dissemination and implementation<sup>79</sup> does not provide a definition, but dissemination is used in the context of “the dissemination of educational materials”
- In *Improving Patient Care: the implementation of change in clinical practice* by Grol et al,<sup>80</sup> the chapter on the dissemination of innovations states that “the aim of dissemination is to advise and inform the target group about the required practice, and to stimulate them to use the innovation for education, local arrangements, audit of care practices or

improving the quality of care.” They stated that this can be achieved with either a mass media (non-personalised) approach or a personal approach, and for the latter a variety of settings or approaches can be used: continuing medical education courses, local group meetings, opinion leaders, trained outreach visitors or telephone advice

**In summary**, dissemination is concerned with the distribution of material to a certain target group to make them aware of the innovation and stimulate them to adopt it; this material may be tailored to the needs of the group, and be distributed through the mass media, or through personal contact at meetings or courses.

#### *Dissemination of original papers*

Traditionally, from a researcher’s perspective, dissemination has occurred when a paper providing details of an innovation – for example a new diagnostic test or a new treatment - has been published in a peer-reviewed journal and distributed to subscribers to that journal. For this to be defined as dissemination as discussed above, the relevant target group would need to be subscribers to the journal. For example, if the target group was GPs, then the researcher might target the British Medical Journal or the British Journal of General Practice for publication in the knowledge that the majority of GPs subscribe to these journals. A problem arises if the paper is not accepted for publication in the targeted journal but published in one to which the target group does not subscribe. However, in general, it has not been published papers which have been the focus of dissemination activities but clinical guidelines.

### *Dissemination of clinical guidelines*

Clinical guidelines have become an increasingly familiar part of clinical practice in the last two decades.<sup>81</sup> The Scottish Intercollegiate Guideline Network<sup>m</sup> (SIGN) published its first guideline in 1995.<sup>82</sup> and the National Institute for Health and Care Excellence (NICE) published its first guideline in 2001.<sup>83</sup>

In the United States of America in 1989 the Agency for Health Care Policy and Research<sup>n</sup> (AHCPR) was created with a remit to “enhance the quality, appropriateness, and effectiveness of health care services. . . .”, which was in part delivered through the development, dissemination, and evaluation of practice guidelines.<sup>84</sup> Clinical practice guidelines were defined by the agency as “systematically developed statements to assist practitioner and patient decisions about appropriate health care for specific clinical circumstances.”<sup>84</sup>

The development of clinical guidelines has improved over the last two decades with an increasingly systematic approach and the introduction of methods by which to assess if a guideline has been appropriately developed.<sup>85</sup> Guidance on developing guidelines has been produced on different aspects of the process, such as the need for transparency in their development including the declaration of interests of those developing the guideline; the composition of the guideline development group; how the evidence is found and

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<sup>m</sup> The Scottish Intercollegiate Guideline Network (SIGN) is part of Healthcare Improvement Scotland. Its objective is “to improve the quality of health care for patients in Scotland by reducing variation in practice and outcome, through the development and dissemination of national clinical guidelines containing recommendations for effective practice based on current evidence”. Taken from SIGN website <http://www.sign.ac.uk/> (accessed 04/07/2010).

<sup>n</sup> The Agency for Health Care Policy and Research (AHCPR) is a Public Health Service Agency in the U.S. Department of Health and Human Services. Its mission is “to produce evidence to make health care safer, higher quality, more accessible, equitable, and affordable, and to work with the U.S. Department of Health and Human Services (HHS) and other partners to make sure that the evidence is understood and used.” Taken from AHCPR website <http://www.ahrq.gov/> (accessed 04/07/2014).

systematically reviewed; and the language used in the recommendations, updating guidelines and addressing multimorbidity.<sup>86-88</sup> The AGREE Collaboration (Appraisal of Guidelines, Research and Evaluation) has revised its original instrument for evaluating the quality of guidelines to incorporate latest best practice on guideline development<sup>85</sup> and can be used proactively to plan development of new guidelines.

Different strategies have been used to disseminate guidelines. A review of 1360 guidelines developed in Canada between 1994 and 2005<sup>89</sup> reported that almost all the guidelines had been disseminated using at least one passive strategy, such as direct mailing to specific groups (members of the organisation developing the guideline or attendees at a relevant conference), or publishing in newsletters or journals. In addition about 60% of guidelines used at least one education strategy, such as organising continuing medical education activities.

A health technology assessment published in 2004 systematically reviewed the effectiveness of guideline dissemination and implementation strategies<sup>79</sup> and assessed 235 studies (reporting on 309 comparisons of different strategies) which they identified as relevant to the review. The guidelines were from 14 different countries, mainly the USA (71%), the UK (11%), Canada (6%), and Australia and the Netherlands (3%). Of the dissemination strategies, which were either used on their own or in combination with other strategies, the most frequent was that of passive dissemination through distribution of educational material (utilised in 165 of the 309 comparisons), followed by organisation of educational meetings (in 129 of 309 comparisons). They reported from the analysis of comparisons of single strategies that: i) distribution of educational material resulted in a modest improvement in the processes of care, but that “the evidence base is sparse and of poor

quality”, and ii) educational meetings resulted in a small, or no, effect, but that there were relatively few studies evaluating this.

A Cochrane systematic review, updated in 2011, entitled “Printed educational materials: effects on professional practice and healthcare outcomes (Review)”<sup>78</sup> assessed 45 studies investigating the effect of passive dissemination through the distribution of printed educational materials as a single strategy. They reported on categorical and continuous measures of professional practice and, although they aimed to determine the effect on patient outcomes, they were unable to do so through lack of studies. For categorical measures, such as whether patient education was given or not, there was an overall 2% absolute improvement with a range over the comparisons from -6% to +29%. For continuous measures, such as the proportion of patients in whom the desired drug was prescribed, there was an overall 13% improvement with a range from -16% to +196%. The quality of evidence contributing to these estimates of effect, was respectively graded as low and very low. The GRADE assessment tool<sup>90</sup> used for this quality assessment states that such grading indicates that there is considerable uncertainty about estimates from evidence of this quality and that further research may very well change the estimate. Overall the authors concluded that “... when used alone and compared to no intervention, PEMS [Printed Educational Material] may have a small beneficial effect on professional practice outcomes”.

There is not a separate Cochrane systematic review on “active dissemination”, although there is a review on the effect of continuing educational meetings and workshops on professional practice,<sup>91</sup> which is the most frequent dissemination strategy additional to the distribution of educational material. The Cochrane Effective Practice and Organisation of Care<sup>90</sup>

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<sup>90</sup> The Cochrane Effective Practice and Organisation of Care (EPOC Group is a review group of the Cochrane Collaboration. The “research focus of the EPOC Group are interventions designed to improve the delivery,

(EPOC) group define this strategy as “Educational meetings (Health care providers who have participated in conferences, lectures, workshops or traineeships.)”.<sup>92</sup> One of the comparisons in the review was the effect of educational meetings as a single strategy on professional practice, and 56 studies were included in the comparison. In the studies, which were assessed to have a low or moderate risk of bias, 21 comparisons with dichotomous outcome data and five comparisons with continuous outcome data were reported. For dichotomous outcomes there was a 6% median absolute improvement with an interquartile range 2.9% to 15.3%. For continuous outcomes there was a median relative percentage change of 10% (interquartile range 8% to 32%). The review also assessed the effect of different types of educational meetings and the characteristics of professional practice being targeted and concluded that “Strategies to increase attendance at educational meetings, using mixed interactive and didactic formats, and focusing on outcomes that are likely to be perceived as serious, may increase the effectiveness of educational meetings.” Overall they concluded that educational meetings can improve professional practice but that the “effect is most likely to be small and similar to other types of continuing medical education, such as audit and feedback, and educational outreach visits.”

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practice, and organisation of health care services”. Taken from EPOC website <http://epoc.cochrane.org/> (accessed 04/07-2014).



**In summary**, “passive dissemination”, given current evidence on the passive dissemination of educational material, seems to have only a small effect on professional practice. Educational meetings, which can be a vehicle for “active dissemination” of educational material, can have a similar small effect, although this effect can be enhanced by selecting certain formats for the meetings. This conclusion on the effect of dissemination should not be unexpected, given that diffusion theory tells us that the process leading to a decision to adopt an innovation – a change in practice – is complex.<sup>77</sup> It is implementation which adopts a more complex approach to changing practice.

## **2.4.4 Implementation**

### **2.4.4.1 Introduction**

Empirical evidence from a study in the USA by Pathman et al<sup>93</sup> on the uptake of the recommendations of a guideline on vaccination found that the physicians who were surveyed needed to first be **aware** of the recommendations, then **agree** with them, then decide to **adopt** them in practice, and finally to **adhere** to them in day-to-day practice. This model by Pathman et al has been adopted by the evidence-based medicine community to describe what has been termed the “evidence pipeline”<sup>94</sup> (figure 2.1).

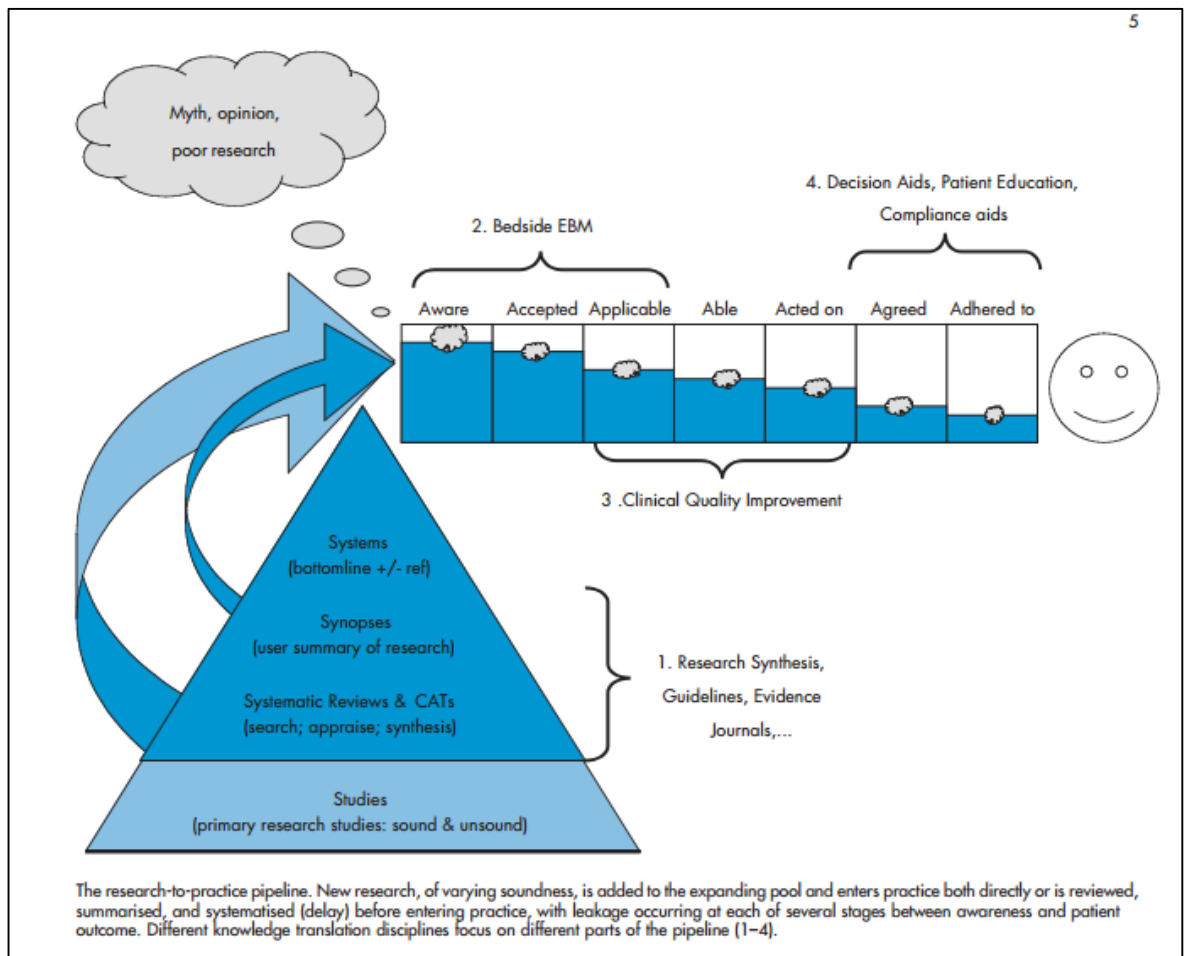


Figure 2.1 The Evidence to Practice Pipeline with permission from Glasziou 2005 <sup>94</sup>

In the “evidence pipeline” model, research evidence from various sources and of varying quality enters the pipeline at the top, and the process of uptake into practice involves the **awareness** and **agreement** stages from Pathman model (see previous page), then : an **“applicable”** stage (can the clinician identify which patients to apply the evidence to?), an **able** stage (the knowhow and access to put the evidence into practice), an **acted on** stage (equivalent to the Pathman **“adhere”** stage, is the practice adhered to when needed in day-to-day practice?), and then two stages relating to the patient (for example **agreeing** to the new treatment and **adhering** to the treatment regime).

From the Pathman and “evidence pipeline” models, and the insights from diffusion research, the process of effecting a change in clinical practice appears complex, and the approach to speeding up, and enhancing, the uptake of innovations which require a change in clinical practice will need to consider how to address all the stages of this “pipeline”. It is how to undertake this approach which “implementation science” strives to address.

#### **2.4.4.2 Implementation Science**

To implement is defined in the online Oxford Dictionary as to “put (a decision, plan, agreement, etc.) into effect” and implies an active process of “putting into effect”.<sup>95</sup> The definition from Greenhalgh et al was: “active and planned efforts to mainstream an innovation within an organization”. The desire to understand what these “efforts” should be and how they should be undertaken has spawned a new science, that of “implementation science”. An editorial in the first edition of the Implementation Science Journal in 2006<sup>96</sup> stated that this new science was concerned with the scientific study of how best to systematically effect the uptake of research evidence and other evidence-based practices, and that this involved the study of what influences professional practice (or behaviour). The focus of implementation research therefore is more the “push”, rather than the “pull”, approach of evidence-based practice. It is not concerned with how individuals can better use individual clinical encounters as a prompt for getting research evidence into practice, but rather how the clinical practice of a group of practitioners can be enhanced in line with the latest and best research evidence, often in the form of recommended best practice based on research evidence as in a clinical guideline.

#### **2.4.4.3 Audit and feedback and other interventions to change clinical practice**

Although this is a “newly born” science, efforts to improve the quality of clinical practice are not new. In the UK clinical audit was widely promoted by the Royal College of General Practitioners from the 1980s <sup>97</sup> and the National Centre for Clinical Audit from the 1990s, <sup>98</sup> and was an approach to quality improvement which many GP colleagues adopted. The process often started from clinical practice and was cyclical. It comprised identification of an aspect of care which was thought to be sub-optimal, identification of relevant guidance on best practice, and agreement on the criteria and standards with which to audit care. The task then was to collect data on delivery of the criteria in practice and compare them with the agreed standards, feedback comparison to those delivering the care, identify where care should be improved, and plan how to make improvements. The final step was to undertake the improvement plan, re-collect data on delivery and continue round the cycle until optimal care has been achieved <sup>97</sup>. The initial focus of this activity was often on the management of chronic conditions such as diabetes, hypertension, ischaemic heart disease and stroke. <sup>98</sup> The change in clinical practice required to enhance management was not overly complex for these conditions: that blood pressure measurement and certain tests should be regularly performed, that the results should be acted on, and that treatment should be optimised so, for example, blood pressure and blood glucose levels were at recommended values. Clinical audit was often undertaken in combination with other processes, such as the use of opinion leaders and observability in others (by comparing audit results between practices): processes which Rogers had reported increased the rate of diffusion.

The effectiveness of audit and feedback to change practice has been reviewed by the Cochrane EPOC group <sup>99</sup>. They also reviewed the effectiveness of other interventions to change practice: such as the distribution of educational material <sup>78</sup>, education meetings <sup>91</sup>

(both as described above see section 2.4.3, pages 51-52), the involvement of local opinion leaders,<sup>100</sup> educational outreach visits,<sup>101</sup> and on-screen computer reminders.<sup>102</sup> For all these interventions, the authors of the reviews concluded that they resulted in small (distribution of education material, educational meetings, audit and feedback, opinion leaders and educational outreach visits) or small to modest (on-screen reminders) improvements in professional practice.

**In summary**, there are a number of possible interventions which have been developed to change clinical practice, and have some evidence of benefit, but it is not clear which intervention to use for a particular change in clinical practice.

#### **2.4.4.4 The implementation process for changing clinical practice**

As can be seen from the previous section, changing behaviour, and specifically changing clinical practice, can be complex and approaches to changing behaviour/clinical practice need to address this complexity. Implementation research suggests that the implementation process can be facilitated by a number of considerations:

- There are characteristics of an innovation which can hinder or facilitate uptake
- The gap between current practice and practice required by the innovation needs to be understood and taken into account
- Certain characteristics of individuals in the group targeted with change are determinants of change and need to be understood and addressed
- There are a range of interventions which are effective in changing practice and the right ones for the job in hand need to be selected

#### **2.4.4.5 Implementation research and factors which influence clinical practice**

Implementation research has sought to provide answers to the question, of which specific intervention to use to achieve a specific change in behaviour, by investigating which factors influence clinical practice and how to systematically harness these factors in changing practice, but it has not solely focussed on studying factors relating to clinical practice. It has been concerned with factors relating to other types of behaviour change, such as stopping smoking, reducing excessive alcohol consumption, enhancing self-management or increasing treatment adherence in long term conditions. The key factors relating to changing behaviour and changing clinical practice have been identified as: i) nature of the innovation or desired behaviour, ii) current clinical practice in the group in whom change is sought, iii) characteristics of individuals in this group, such as their attitude to the innovation/behaviour, and iv) selection of interventions to change clinical practice. In the following sections, examples of research concerning behaviour in general and specific examples regarding clinical practice are presented.

##### *i) Nature of the innovation/behaviour*

Understanding the characteristics of an innovation/behaviour and how they may affect uptake has its roots in diffusion research. Rogers commented that it was the perceived attributes of an innovation, by its potential adopters, which were of interest and that “Like beauty, innovations exist only in the eye of the beholder. And it is the beholder's perceptions that influence the beholder's behaviour”.<sup>77</sup> He describes five categories of perceived attributes (see above section 2.4.2, page 45), which have been shown to influence the rate of diffusion: relative advantage, compatibility, complexity, trialability and observability.

- The relative advantage of an innovation is how much better than current practice it is perceived to be, which may be an economic advantage or an increase in social status, with the former advantage being increased if incentives to adopt are provided.
- Compatibility is how consistent the innovation is perceived to be with existing norms, beliefs, values and needs of potential adopters, with greater compatibility being associated with less uncertainty about the innovation.
- Complexity is how difficult it is perceived to be to understand and/or use the innovation.
- Trialability is the degree to which an innovation can be perceived to be tried in a limited way before being fully adopted, with some innovations being able to be divided into a number of smaller innovations which can be tried separately.
- Observability is how easily the innovation can be seen being successfully undertaken by others, with this aiding its communication.

Grol et al <sup>80</sup> reviewed the literature in this area and added to the characteristics listed above:

- Involvement of the group in which the innovation is to be implemented with its development increases the likelihood of uptake
- Adaption of the innovation to local circumstances increases the likelihood of uptake

## *ii) Current clinical practice*

Implementation of innovations which require a change in practice in healthcare settings requires an understanding of current organisation of care in the setting in which the change is proposed: to know who (the target group) or what is to be changed. For example:

- Who are the healthcare professionals currently delivering the care?
- What is the nature of the care they are delivering?
- How is the care currently delivered (by individuals working alone, by a multiprofessional team working together, by several teams working in one or more organisations)?

## Identifying relevant stakeholders

In some settings the “who” might be straightforward, for example the diagnosis and management of OA in general practice is predominantly undertaken by GPs, but for other activities care can be delivered by a range of people in different settings, with others having a stake in the delivery of this care. To gain an understanding of the people and organisations involved it is advised that a social map is drawn <sup>80</sup>. The map indicates the stakeholders who need to be considered when planning the implementation, for example in a healthcare setting, frontline delivery staff, their managers, professional organisations and healthcare unions, patients who are receiving the care, commissioners of the service, NHS and government bodies which set policy for the area in question, and more generally interested parties in society as a whole.



### Analysis of performance of target group

Having identified the relevant stakeholders, and their current role relating to the planned change, it is necessary to be able to describe the details of current practice of the people in whom a change in practice is desired. This requires an analysis of performance of target group in order to identify the gaps which need to be bridged by the implementation process. It is important to understand how current practice relates to desired practice. There are a number of direct and proxy methods which can be used to determine current clinical practice in the target group such as direct observation, video or audio recordings, clinician self-report, medical record review and patient report.<sup>103</sup> The relative merits of these methods are discussed in Chapter 5 (section 5.3.1 page 154), which presents the methodology selected for the thesis.

### *iii) Analysis of individuals' characteristics in the target group*

Individuals' characteristics, such as attitudes to the innovation, beliefs about its effect or motivation to undertake it, and how these relate to changing clinical practice, have been extensively studied. This has resulted in a large number of theories which have been developed to explain the processes involved with behaviour change in general and which have been advocated to inform activities to change clinical practice.<sup>80, 104-107</sup> In 1996 Roberston et al proposed a framework for applying theories of behaviour change and listed nine theories which could inform change at: personal level (e.g. self-efficacy and preparedness to change), group level (e.g. social comparison and groupthink) and organisational level (power theory and cultural change).<sup>104</sup> Grol et al devoted a chapter to theories on implementation of change in health care<sup>80</sup> and listed 16 theories, or groups of theories which could be used to inform the implementation of change. Michie et al<sup>105</sup> in a

paper reporting on a consensus exercise on the use of theory for implementing evidence-based practice identified 33 psychological theories which the consensus group identified as relevant to implementation (box 2.1). They listed three types of theories: motivational theories which seek to explain change in those who have not yet decided on making the change; action theories which seek to explain how change is enacted; and organisational theories which seek to explain how social and organisational factors affect change.

MOTIVATION THEORIES	ACTION THEORIES
<ol style="list-style-type: none"> <li>1. Theory of planned behaviour (+ theory of reasoned action, protection motivation theory, health belief model)</li> <li>2. Social cognitive theory</li> <li>3. Locus of control theories</li> <li>4. Social learning theory</li> <li>5. Social comparison theory</li> <li>6. Cognitive adaptation theory</li> <li>7. Social identity theory</li> <li>8. Elaboration likelihood model</li> <li>9. Goal theories</li> <li>10. Intrinsic motivation theories</li> <li>11. Self-determination theory</li> <li>12. Attribution theory</li> <li>13. Decision making theories (e.g. social judgment theory, “fast and frugal” model, systematic versus heuristic decision making)</li> <li>14. Fear arousal theory</li> </ol>	<ol style="list-style-type: none"> <li>15. Learning theory</li> <li>16. Operant theory</li> <li>17. Modelling</li> <li>18. Self-regulation theory</li> <li>19. Implementation theory/automotive model</li> <li>20. Goal theory</li> <li>21. Volitional control theory</li> <li>22. Social cognitive theory</li> <li>23. Cognitive behaviour therapy</li> <li>24. Transtheoretical model</li> <li>25. Social identity theory</li> </ol>
	ORGANISATION THEORIES
	<ol style="list-style-type: none"> <li>26. Effort-reward imbalance</li> <li>27. Demand-control model</li> <li>28. Diffusion theory</li> <li>29. Group theory (e.g. group minority theory)</li> <li>30. Decision making theory</li> <li>31. Goal theory</li> <li>32. Social influence</li> <li>33. Person situation contingency models</li> </ol>

Box 2.1 Theories identified as applicable to implementing evidence-based practice (with permission and adapted from Michie et al 2005 <sup>105</sup>)

Individuals’ characteristics which are covered by such theories include: motivation and self-efficacy (components of the theory of planned behaviour <sup>108</sup>), and the degree to which they are influenced by others and their experience of trying the behaviour (components of social cognition theory). <sup>109</sup> Characteristics which have been shown to predict, or theorised to predict, uptake of the desired behaviour have been termed determinants of behaviour

change.<sup>105</sup> In the theory of planned behaviour<sup>108</sup> (figure 2.2), actual performance of a certain behaviour is assumed to be directly influenced by an individual's motivation to perform the behaviour (termed "intent" in the theory) and by their perceived ability to perform it (self-efficacy). The behaviour is also indirectly influenced by: their attitude to the behaviour, what their peers and others do and think (subject norm) and self-efficacy. Determinants of behaviour change such as these are referred to as the theoretical "constructs" of the theory or model.

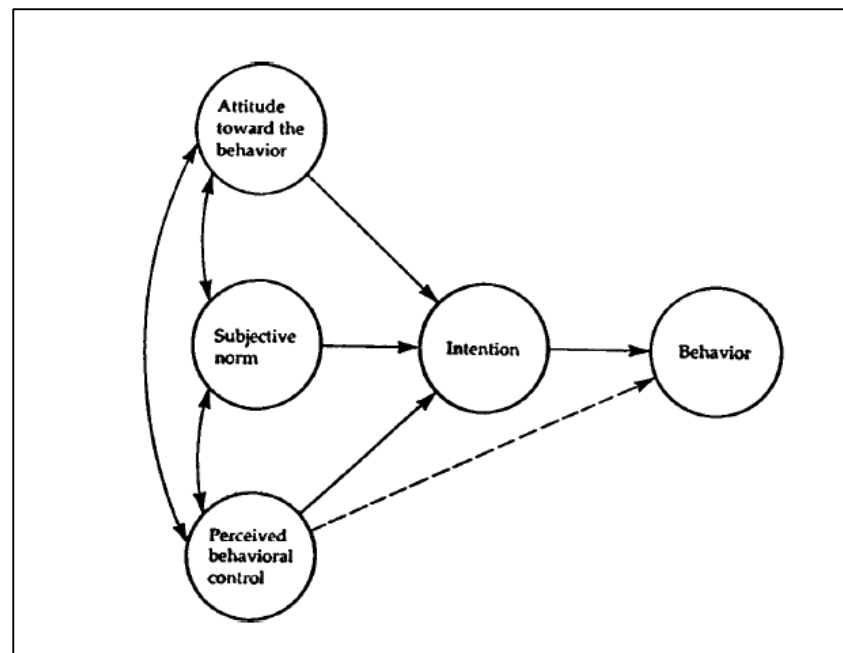


Figure 2.2 The theory of planned behaviour with permission from Ajzen 1991<sup>108</sup>

Two papers by Eccles and colleagues, in 2005 on the use of theory in promoting the uptake of research findings,<sup>106</sup> and in 2006 on designing theoretically-informed implementation interventions,<sup>107</sup> noted the large number of theories which could be drawn on and suggested methods to use in deciding which to choose for a particular implementation project. To follow their methods for deciding which theory to select, a thorough knowledge and understanding of all potentially relevant theories, such as the 33 listed in box 2.1, would

have been needed – probably not within the expertise of many teams undertaking implementation projects unless a psychologist is a member of the team.

**In summary**, the use of theory in analysing the characteristics of the target group which may influence change in practice is recommended, and many relevant theories exist, but choosing which theory to use can be a complex task. What would be helpful would be a practical tool to guide the use of theory in analysis of target group, an issue returned to below in section 2.5.2 page 70.

*iv) Selection of interventions to change behaviour*

Traditionally the approach to changing clinical practice has been to provide the target group with knowledge about the innovation, in the expectation that uptake would follow. In healthcare this approach has been through publication and dissemination of original papers, systematic reviews, clinical guidelines, and providing continuing medical education, often in the form of lectures. Other approaches used more recently have included the interventions described above: audit and feedback, educational outreach visits, use of opinion leaders, on-screen computer reminders. The increasing use of psychological theories to understand the determinants of behaviour change suggest still further possible interventions to change behaviour, such as those targeting self-efficacy, motivation or preparedness for change. There are therefore a large number of interventions from which to choose when selecting the intervention for a particular implementation project.

### 2.4.5 Appropriate approaches for this thesis?

In developing the methodology for this thesis, the processes of diffusion, dissemination and implementation, as reported above, were reviewed to determine if any of these processes might be appropriate for this thesis. The processes of diffusion and dissemination were not seen to be appropriate as:

- Diffusion, although describing many of the factors which influence the uptake of innovation, does not describe how to change clinical practice
- Dissemination, although describing how clinical practice can be changed through the distribution of written material, with or without educational meetings, does not describe how to approach the many of the factors which Rogers identified as affecting the rate of uptake of innovations.

However, the process of implementation seemed appropriate since, **in summary**, it encompassed consideration of four important factors relevant to changing clinical practice, viz., i) the nature of the desired practice, ii) the nature and extent of the gap between current practice and desired practice, iii) the opinions of those being asked to change and iv) the selection of interventions to change practice.

The final step was to select a framework for undertaking the implementation process in a do-able manner for this thesis.

## 2.5 An implementation framework

In selecting an implementation framework for use in this thesis, two considerations were of prime importance:

1. The framework needed to address the key factors which had been identified in the review of the implementation research literature as important in changing clinical practice
2. The framework needed to enable theory to be used in a do-able manner, specifically the use of theory to identify target group characteristics which might influence uptake of the change in clinical practice

From the review of the literature, three models or frameworks were identified for the implementation framework in this thesis:

1. An implementation of change model which addressed all of the four important factors referred to above (see summary box previous page)
2. A framework for the use of theory in analysing the opinions of those being asked to change (third factor in summary box on previous page)
3. A model of selection of interventions to change practice (fourth factor in summary box)

The three models or frameworks are presented below.

### **2.5.1 The implementation of change model**

The literature on improving patient care through implementing change in clinical practice was synthesised in *Improving Patient Care: the implementation of change in clinical practice* first published in 2005.<sup>80</sup> The book describes the principles of implementation of change, both those derived from practical examples and those from theory, and proposes a model for the implementation of change (box 2.2).

Step 1	Development of a concrete proposal and targets for improvement or change <ul style="list-style-type: none"> <li>• Systematic development</li> <li>• Involvement of target group</li> <li>• Good ‘product’</li> <li>• Accessible and attractive form</li> <li>• Opportunity for local adaptations</li> </ul>
Step 2	Analysis of performance, target group and setting <ul style="list-style-type: none"> <li>• Stakeholders</li> <li>• Current practice</li> <li>• Barriers and incentives</li> <li>• Readiness to change of subgroups</li> </ul>
Step 3	Development or selection of strategies and measures to change practice <ul style="list-style-type: none"> <li>• Tailored to target group and/or setting</li> <li>• Cost-effective mixture of techniques of proven value</li> <li>• Strategies for implementation</li> </ul>
Step 4	Development, testing and execution of implementation plan
Step 5	Evaluate and, where necessary, adapt plan

Box 2.2 The Grol and Wensing Implementation of Change Model (with permission and adapted from *Improving Patient Care* 2005 <sup>80</sup>)

The model was developed to guide the planning and execution of an implementation process either from a “top-down” perspective, for example the implementation of a clinical guideline, or a “bottom-up” perspective, for example when an audit has revealed sub-optimal delivery of care and there is a need to improve delivery. In planning the implementation process the model states that: i) the overall aim should be clearly formulated, ii) the team to undertake the implementation should be formed and should have the relevant expertise for the job, including leadership and technical expertise, iii) the target group should be identified early on in the process and representatives of this group should be involved at all steps, and iv) practical issues such as timeline and budget should be decided.

### **2.5.1.1 Step 1 – Development of a concrete proposal for change**

The first step in the process is to develop what is termed the “concrete proposal” for change: a carefully developed and credible proposal which clearly sets out the specific targets for change. For example, the recommendations of an evidence-based guideline which has been systematically developed could be used to develop a proposal on the delivery of specific areas of clinical practice. In the context of the NICE OA 2008 Guideline the proposal might be that GPs: i) undertake a holistic assessment of a person 45 years and older presenting with peripheral joint pain, ii) provide written information about the nature and treatment of OA, and iii) offer the patient the interventions recommended in the guideline in the order in which their use is advised. The resulting proposal would then have a number of clearly stated targets for GP clinical practice change. It is at this step that the characteristics of the proposed change need to be compared with characteristics which are known to hinder or facilitate adoption (see section 2.4.4.5, page 58), for which detailed guidance is available.<sup>80</sup> The involvement of representatives of the target group in this step is recommended as this has been shown to enhance uptake and was included by Greenhalgh et al following their systematic review of the literature.<sup>76</sup> The role of the target group representatives is to suggest, in light of their experience and expertise, how the proposal for change might be refined. In addition, representatives of the target group being involved with the development of the proposal for change increases the credibility of the proposal with the target group, and is recommended practice in the development of clinical guidelines.<sup>85</sup> The output from this step is a proposal for change which is formulated in such a way as to give it the best likelihood of uptake.



### **2.5.1.2 Step 2 - Analysis of performance, target group and setting**

The second step is to analyse the context in which the change is to be made. The stakeholders who are relevant for this change need to be identified, as does how clinical practice in this area is currently being delivered and what factors might hinder or facilitate a change in practice of those who are targeted with change. As discussed above (see section 2.4.3.4, page 59), such factors may operate at various levels: the individual, the team, the organisation, or society in general.

Finally, when undertaking an analysis of which factors are relevant to a particular change in practice, it is recommended that an approach based on theoretical models or frameworks, as discussed in section 2.4.3.4 (page 63), should be selected. The output from this step should be a clear understanding of the individuals and organisations relevant to the change, of current practice and how it differs from the desired practice, and of the factors which might hinder or facilitate the intended behavioural changes.

### **2.5.1.3 Step 3 – Development or selection of strategies and measures to change practice**

The third step builds on the first two steps: having developed a concrete proposal for change, and clarified the context for the change, the task is then to develop or select the methods to be utilised in effecting change: to develop what has been termed a **“behaviour change intervention”**.<sup>110</sup> This will often require a complex intervention consisting of a number of interacting components.<sup>111</sup> These need to be selected in a logical manner, need to address the facilitating and hindering factors and be acceptable to, and feasible in, the target group. It is necessary to focus specifically on the techniques used to change practice – termed

**“behaviour change techniques”**,<sup>110</sup> such as provision of information, skills training, discussion and reminders. Techniques with known effectiveness such as those described above (see section 2.4.4.3, page 56) have been advocated for use over those with no empirical evidence of effect.<sup>112</sup> The output from this step is a systematically developed behaviour change intervention, which can be clearly described in terms of the content (for example the knowledge and/or skills needed to undertake the change in practice), and in terms of the techniques to be used, including the mode of delivery (for example whether using written material or in workshops).

#### **2.5.1.4 Step 4 - Development, testing and execution of implementation plan**

The fourth step is concerned with undertaking the behaviour change intervention and may involve piloting the intervention to check for acceptability and feasibility.

#### **2.5.1.5 Step 5 - Evaluate and, where necessary, adapt plan**

In the fifth step the data collected on the chosen outcomes are analysed to determine the effect of the behaviour change intervention. In ongoing implementation projects this may, if the desired outcomes have not been achieved, require adaption of the behaviour change intervention, or its delivery, and re-evaluation of the refined approach.

### **2.5.2 The Theoretical Domains Framework**

Step 2 of the implementation of change model states that hindering and facilitating factors – factors which determine the extent to which change will occur and termed **“determinants of change”** - need to be identified, but the model does not include a method with which to systematically undertake this task. The consensus work by Michie et al has provided such a method.<sup>105</sup> Michie et al combined the various psychological models relevant to behaviour

change, and their constructs, into one overarching framework which would encompass all the constructs in these individual models and obviate the need to choose between models.

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In order to arrive at consensus Michie assembled three expert groups: group 1: health psychology theorists, group 2: health service researchers and group 3: health psychologists without specific expertise in theory. The study comprised four steps:

1. Group 1: i) identified as many psychological theories and constructs relevant to implementation as they could, ii) prioritised those most relevant to interdisciplinary research and behaviour change of healthcare professionals, iii) grouped the prioritised constructs into domains (sets of similar constructs), iv) undertook a consensus exercise to agree on allocation of constructs to domains, v) reviewed the domains, and allocated constructs, for coherence of domains and completeness of constructs, and vi) agreed a final list of domains and constructs.
2. Groups 1 and 2 then met together to evaluate their usefulness for health service researchers and compare the domains to a previously generated list in the USA <sup>113</sup> and refine the list.
3. Group 3 undertook a “backward validation” exercise: they were given the final list of domains and asked to identify theories and constructs that should be included in each domain.
4. Lastly groups 1 and 2 developed and piloted a set of interview questions to be used when assessing if a domain was a determinant of change in a particular implementation study

Thirty-three psychological theories and 128 included constructs were identified and a framework of 12 domains and underpinning constructs agreed: the Theoretical Domains Framework (TDF) (table 2.1). Eleven of the 12 domains concern characteristics of the people in whom change is desired, or their setting, with the 12th concerning the attributes of the change or desired behaviour itself.

<b>Domain</b>	<b>Constructs</b>
Knowledge	Knowledge Knowledge about condition/scientific rationale Schemas + mind-sets + illness representations Procedural knowledge
Skills	Skills Competence/ability/skill assessment Practice/skills development Interpersonal skills Coping strategies
Social/professional role and identity	Identity Professional identity/boundaries/role Group/social identity Social/group norms Alienation/organisational commitment
Beliefs about capabilities	Self-efficacy Control of: behaviour and material and social environment Perceived competence Self-confidence/professional confidence Empowerment Self-esteem Perceived behavioural control Optimism/pessimism
Beliefs about consequences	Outcome expectancies Anticipated regret Appraisal/evaluation/review Consequents Attitudes Contingencies Reinforcement/punishment/consequences Incentives/rewards Beliefs Unrealistic optimism Salient events/sensitisation/critical incidents Characteristics of outcome expectancies: physical, social, emotional, sanctions/rewards, proximal/distal, valued/ not valued, salient/not salient
Motivation and goals	Intention; stability of intention/certainty of intention Goals (autonomous, controlled) Goal target/setting Goal priority Intrinsic motivation Commitment Distal and proximal goals Transtheoretical model and stages of change
Memory, attention and decision processes	Memory Attention Attention control Decision making
Environmental context and resources	Resources/material resources (availability and management) Environmental stressors Person 6environment interaction Knowledge of task environment

Social influences	Social support Social/group Organisational development Leadership Team working Group conformity Organisational climate/culture Social pressure Power/hierarchy Professional boundaries/roles Management commitment Supervision Inter-group conflict Champions Social comparisons Identity; group/social identity Organisational commitment/alienation Feedback Conflict—competing demands, conflicting roles Change management Crew resource management Negotiation Social support: personal/professional/organisational, intra/interpersonal, society/community Social/group norms: subjective, descriptive, injunctive norms Learning and modelling
Emotion	Affect Stress Anticipated regret Fear Burn-out Cognitive overload/tiredness Threat Positive/negative affect Anxiety/depression
Behavioural regulation	Goal/target setting Implementation Action planning Self-monitoring Goal priority Generating alternatives Feedback Moderators of intention-behaviour gap Project management Barriers and facilitators
Nature of the behaviours	Routine/automatic/habit Breaking habit Direct experience/past behaviour Representation of tasks Stages of change model

Table 2.1 Theoretical domains and eliciting questions for investigating the implementation of evidence-based practice with permission and adapted from Michie et al 2005 <sup>105</sup>

For each domain, questions were developed to be used in one-to-one interviews and focus groups when undertaking an analysis of the target group. For example, for the knowledge domain one of the questions was “Do they know what the guideline says?” for the social/professional role and identity domain “What do they think about the credibility of the guideline?”, and for the memory, attention and decision process domain “Is this something they usually do?”. This set of interview questions enables the TDF to be practically applied to the task of identifying relevant determinants of change, an example question for each domain is given in box 2.3.

<b>TDF Domain</b>	<b>Example of use of domain when assessing target group concerning a behaviour change “X”</b>
Knowledge	Are they aware of X?
Skills	Do they know how to do X?
Social/professional role and identity	Is X compatible with professional identity?
Beliefs about capabilities	How confident are they that they can do X?
Beliefs about consequences	What do they think will happen if they do X?
Motivation and goals	How much do they want to do X?
Memory, attention and decision processes	Will they remember to do X?
Environmental context and resources	Are there physical or resource factors which will facilitate or hinder X?
Social influences	Will they observe others doing X?
Emotion	Does X evoke an emotional response?
Behavioural regulation	What preparatory steps are needed to do X?
Nature of the behaviour	How understandable is X?

Box 2.3 Examples of interview questions derived from the Theoretical Domains Framework with permission and adapted from Michie et al 2005 <sup>105</sup>

The TDF has been used to identify determinants of behaviour change for an extensive range of conditions and clinical situations, for example, mobilisation of older patients in hospital <sup>114</sup>, utilisation of a rule for the use of computer tomography (CT) scans for head trauma <sup>115</sup> and management of chronic obstructive airways disease. <sup>116</sup> Its development, and use in a range of other studies, has been reviewed. <sup>117</sup>

A specific example of the TDF's use was the study by French et al when it was utilised to determine barriers and facilitators to uptake of guidance on management of non-specific low back pain by GPs in Australia. <sup>118</sup> Two GP behaviours recommended in the guidance were identified for implementation: i) restricting the use of x-rays in the assessment of people with low back and ii) advising people with low back pain to keep active. Focus groups were undertaken with GPs during which questions relating to the TDF domains were asked about the two behaviours. Examples of barriers and enablers which were identified, mapped to the relevant TDF domain are shown in table 2.2.



<b>TDF Domain</b>	<b>Barrier / enabler identified</b>
Knowledge	GPs were unaware of red flags for low back pain
Skills	Negotiating with the patients that an x-ray is unnecessary
Social/professional role and identity	GPs' role in minimising harm from excessive radiation and encouraging patients to stay active
Beliefs about capabilities	GPs' beliefs in their ability to advise patients to remain active
Beliefs about consequences	Fear of missing underlying pathology by not x-raying. Belief that patient will feel reassured with an x-ray
Motivation and goals	-
Memory, attention and decision processes	GPs forget to give advice to stay active in standard consultations
Environmental context and resources	Limited time to explain the patient does not need an x-ray and advice the patient to keep active
Social influences	GPs perceive that other people / organisations expect x-rays
Emotion	-
Behavioural regulation	-

Table 2.2 Barriers and enablers by Theoretical Domain Framework for uptake of two behaviours recommended for low back pain management adapted with permission from French et al 2012 <sup>118</sup>

Given the theoretical underpinnings, widespread uptake and practicality, the TDF provided a practical and comprehensive list of possible determinants of behaviour change to be utilised at step 2 of the Implementation of Change Model.

### **2.5.3 Model for mapping behaviour change techniques to the TDF domains**

At step 3 of the Implementation of Change Model, the task is the “development or selection of strategies and measures to change practice”. Michie et al., building on the approach taken in the TDF, have developed a model to inform the selection of behaviour change techniques

that target the determinants described in the TDF.<sup>119</sup> They identified, and defined, a set of behaviour change techniques described in the literature and mapped them to the domains in the TDF described above (barring the 12<sup>th</sup> domain): the techniques that they judged to be effective in changing behaviour for each domain.<sup>119</sup> The approach to mapping behaviour change techniques to TDF domains has been incorporated into protocols for the development of complex interventions, for example for tobacco counselling in dentistry<sup>120</sup> and in the study on enhancing the management of low back pain described above.<sup>118</sup>

Continuing with the example for the low back pain study by French et al<sup>118</sup> table 2.3 shows the behaviour change technique selected to address the TDF domains which they had identified as relevant to the study; illustrating the mapping of technique to domain.

<b>TDF Domain</b>	<b>Behaviour change techniques selected for use to overcome modifiable barriers and enhance enablers</b>
Knowledge	Information provision
Skills	Model/demonstrate the behaviour, rehearsal of skill
Social/professional role and identity	Persuasive communication, provide opportunities for social comparison
Beliefs about capabilities	Rehearsal of skill
Beliefs about consequences	Persuasive communication, monitoring of consequences of own behaviour
Motivation and goals	-
Memory, attention and decision processes	Model/demonstrate the behaviour by a peer expert
Environmental context and resources	Model/demonstrate the behaviour by a peer expert
Social influences	Information provision; Persuasive communication
Emotion	-
Behavioural regulation	-

Table 2.3 Behaviour change techniques selected for use by Theoretical Domain Framework for uptake of two behaviours recommended for low back pain management adapted with permission from French et al 2012 <sup>118</sup>

This mapping process provides a practical tool for selecting appropriate behaviour change techniques as the components of a behaviour change intervention for utilisation at step 3.

## 2.6 Conclusions

The task reported in this chapter was the selection of the approach to be adopted for this thesis for changing GP clinical practice.

**In summary,** an implementation approach was selected and three models or frameworks were selected to guide this approach:

- 1 The Implementation of Change Model <sup>80</sup> to guide the overall approach to changing practice
- 2 The Theoretical Domains Framework (TDF) <sup>105</sup> to identify determinants of change
- 3 The Michie model to identify behaviour change techniques to address identified determinants <sup>119</sup>

Their selection enabled a theory driven approach to changing practice to be used to achieve the aim and objectives of this thesis as set out in the next section.

## **2.7 Aim and objectives of the thesis**

### **2.7.1 Aim**

The overall aim of the thesis is to develop a model OA consultation to guide GP clinical practice for the initial management of OA, and to implement the use of the model OA consultation by GPs.

### **2.7.2 Objectives**

1. Development of a model OA consultation
  - a. Undertake a consensus exercise to reach agreement on tasks to be undertaken by GPs when consulted by older adults presenting with peripheral joint pain (chapter 3)
2. Implementation of GP use of the model OA consultation
  - a. Utilise theory to develop a behaviour change intervention to implement the model OA consultation (chapter 4)
  - b. Select and develop methods and measures to evaluate the impact of the behaviour change intervention and describe their use and analysis in this thesis (chapters 5 and 6)
  - c. Deliver the behaviour change intervention to GPs participating in the MOSAICS trial (chapter 7)
  - d. Present and discuss the impact of the behaviour change intervention (chapters 8 and 9)

## **3 DEVELOPMENT OF A MODEL OA CONSULTATION**

### **3.1 Objective**

In order to develop a model OA consultation undertake a consensus exercise to reach agreement on tasks to be undertaken by GPs when consulted by older adults presenting with peripheral joint pain.

### **3.2 Background**

The rationale for developing a model for an initial consultation between a GP and an older adult presenting with possible OA was that: i) such consultations were to be the GP component of the MOSAICS trial intervention (see chapter 1 figure 1.4 page 36), ii) currently such consultations are suboptimal (GP assessment and treatment of OA suboptimal (see Chapter 1 section 1.6 page 27)), and iii) the model OA consultation would be used to define optimal care by GPs delivering the MOSAICS trial intervention.

This section covers four considerations which informed the methodology for developing the model OA consultation: i) the requirements of the MOSAICS trial, ii) previously published models and frameworks for the consultation, iii) methodologies for undertaking consensus exercises when developing recommendations for clinical practice, iv) who should develop and agree the content of the model OA consultation.

#### **3.2.1 The MOSAICS trial requirements**

An overview of the trial intervention is given in chapter 1 (section 1.7 page 33), with the GP component being a patient-centred consultation to support self-management of OA in line

with recommendations in the NICE 2008 OA Guideline.<sup>1</sup> During the consultation, the OA Guidebook and an appointment in the nurse-led OA clinic would be offered.

#### **3.2.1.1 Assessment of patients in the model OA consultation**

The focus of the initial part of the model consultation would be the assessment of adults aged 45 years and over presenting with peripheral joint pain in order to diagnose those with OA. The diagnosis of OA is recommended to be made clinically,<sup>1</sup> on the basis of age and pain in peripheral joints, and this approach to diagnosis would need to be included in the model OA consultation.

The recommendations in the 2008 NICE OA guideline are for the care of people in whom a working diagnosis of OA has been made<sup>1</sup> but since “the management of neck or back pain related to degenerative changes in the spine” was not part of the guideline<sup>1</sup> the focus on assessment was restricted to consideration of peripheral joints, principally those of the knee, hip, hand and foot (the commonest sites for OA).

#### **3.2.1.2 Delivering the model OA consultation**

The model OA consultation was to be delivered by GPs participating in the MOSAICS trial: fully qualified GPs already experienced consulters who are routinely being consulted by patients with OA. It was anticipated by the MOSAICS research team that the GPs would use their existing generic consultation skills to deliver the model OA consultation, and that the generic skills, such as developing rapport and time management, would not need to be specified in the model OA consultation. Rather, the additional specific tasks and skills for better assessment and treatment of OA in general practice would be specified. The rationale for this was pragmatic: the time allocated for training the GPs to deliver the model OA

consultation was limited and it would not have been possible to focus on both generic and specific consultation tasks and skills, and it was the delivery of the specific tasks which were needed to address sub-optimal care for OA.

### **3.2.1.3 A patient-centred approach**

The Whole Systems Informing Self-management Engagement (WISE) model <sup>P</sup> for the provision of support for self-management informed the development of the MOSAICS trial intervention and envisages that healthcare professionals: i) take a patient-centred approach and ii) are able to negotiate a self-management plan with the patient. <sup>121</sup> As a consequence the model OA consultation needed to be patient-centred and include the patient in setting the agenda for the consultation and in decision making. However, the model OA consultation needed to promote and support use of NICE OA core treatments and first line analgesia, which could conflict with a patient centred approach. For example, if there was no desire, or perceived need, by the patient to become more physically active or, if necessary, lose weight. The potential for the model OA consultation to have conflicting objectives would need to be addressed in its development.

Patient-centredness has been defined as having five dimensions: a biopsychosocial perspective, a focus on the “patient-as-person”, the sharing of power and responsibility between patient and doctor, the establishment of a therapeutic alliance and the need for the doctor to bring his or her humanity to the consultation (the “doctor-as-person”). <sup>122</sup> It describes an active partnership between the healthcare professional and the patient, which is

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<sup>P</sup> The Whole Systems Informing Self-Management Engagement (WISE) model <sup>121</sup> proposes that three elements are necessary to provide self-management support: i) provision of relevant and accessible information for the patient, ii) availability of professionals who are responsive to patient needs and iii) good access to services providing support for self-management.



in contrast to the “doctor-centred” paternalistic approach taken by many doctors in the past.<sup>123</sup> Indeed, as any consultation in healthcare is an encounter between at least two people, patient and healthcare professional, each with their own expertise (for example, the patient being an expert in how their illness affects them and the healthcare professional an expert in the patient’s “disease”), it would seem appropriate to involve both parties in the development of the model OA consultation.

### **3.2.2 Models and frameworks for the consultation**

It has been stated that the consultation lies at the heart of medicine: that "the essential unit of medical practice is the occasion when in the intimacy of the consulting room or the sick room, a person who is ill, or believes himself to be ill, seeks the advice of a doctor whom he trusts. This is a consultation and all else in medicine derives from it."<sup>124</sup> It is not then surprising that the consultation has been the focus of much research to understand, and to develop and improve, it. Various models or frameworks of the consultation have been suggested, both as tools to increase understanding of what happens in the consultation and as aids for “teaching the consultation”.

The most comprehensive consultation framework is the Calgary-Cambridge Guide<sup>125</sup> which identifies 71 skills for better communication and consulting. The basic framework (figure 3.1) consists of five key tasks: i) initiating the session, ii) gathering information, iii) physical examination, iv) explanation and planning, and v) closing the session, which are more or less undertaken in sequence, and two tasks, vi) providing structure, and vii) building the relationship, which are performed throughout the consultation. These seven tasks provide a structure for the consultation and resonate with other frameworks which have been developed.<sup>126-128</sup>

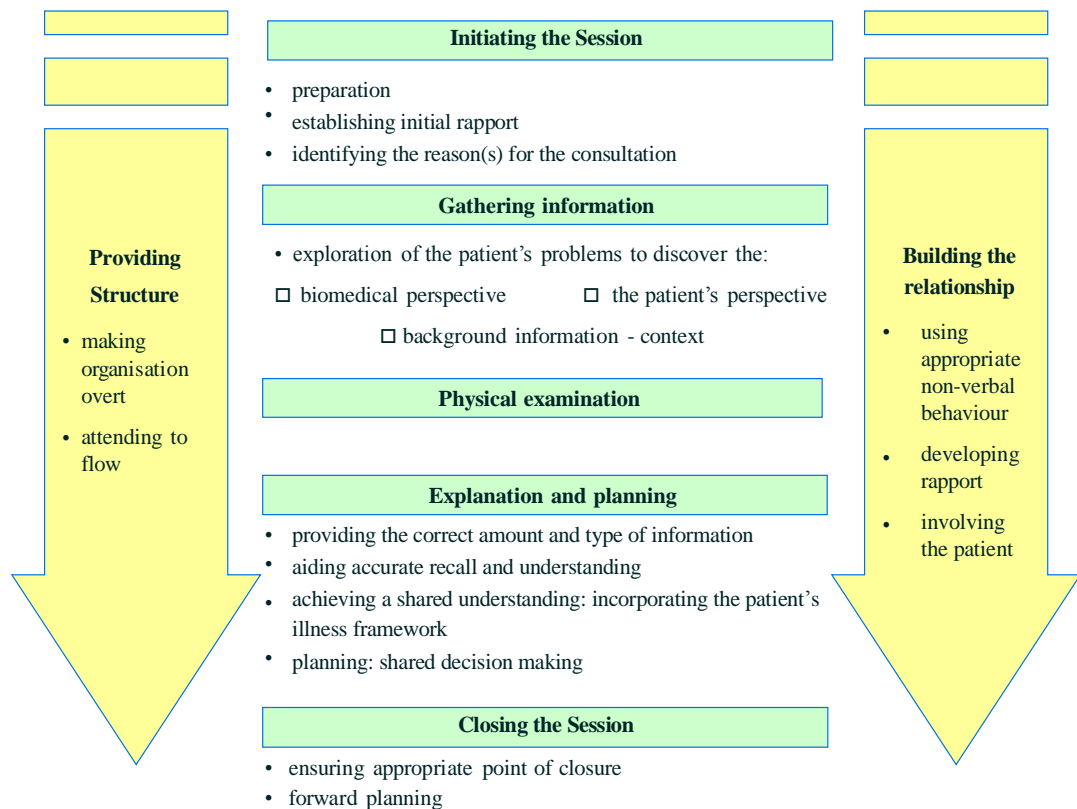


Figure 3.1 Calgary-Cambridge expanded framework (adapted and with permission from Silverman et al. 2005 <sup>125</sup>)

The focus of the model OA consultation was on the specific tasks and skills for OA management, and the initial five key tasks of the Calgary-Cambridge framework were most relevant to providing structure to the development of such a consultation, not the latter two which are generic consultation tasks. The accompanying guide to the Calgary-Cambridge framework lists skills for undertaking each of the tasks, with skills included only if there was evidence that undertaking them improves patient outcomes. <sup>125</sup> The framework has been widely adopted internationally for undergraduate communication skills training <sup>125</sup> and underpins the Royal College of General Practitioners curriculum statement on the consultation. <sup>129</sup> Given the above, the Calgary-Cambridge framework was an ideal framework for developing the model OA consultation, being widely used and evidence-

based, both to inform the overall framework of the model OA consultation and when considering the choice of tasks which could be undertaken in the model consultation. For example, when gathering information the guide lists “encourages the patient to tell the story of the problem(s)”, and when explaining and planning it lists “assesses patient’s starting point: asks for patient’s prior knowledge .....” as recommended skills.

### **3.2.3 Consensus methods**

Recommendations on best practice in healthcare should ideally be based on empirical evidence: recommending an intervention with known benefit or advising against a certain lifestyle with known risk.<sup>70</sup> However, for many aspects of healthcare there is no empirical evidence on which to base recommendations and there is a need to use other methods to decide on best practice. One way is to develop a consensus on what to recommend.

#### **3.2.3.1 Commonly used methodologies**

There are three commonly used methods to develop consensus: the Delphi method, the Nominal Group method and the Consensus Conference.<sup>130</sup> In the former two methods the initial tasks are to: i) define the focus of the consensus exercise, ii) identify the participants to undertake the exercise, iii) draw up a list of options for the exercise to consider, and iv) search for any evidence that can be used as a guide to reaching agreement on the options.<sup>130</sup> For example, in developing a clinical guideline on the use of a new intervention it is necessary to: i) accurately define the nature of the intervention and the setting for its delivery, ii) identify the participants: those who use, or might use, the intervention in this setting, iii) develop a list of conditions for which the intervention might be used, and iv) find available information on the benefits and risks of using the intervention for these conditions.

The two methods then differ in the way consensus is sought.<sup>130</sup> In the Delphi method the participants do not meet, but are individually asked, by post or email, to rate the options over a number of rounds. In the Nominal Group method, after individually rating the options, the group meets to discuss the merits of the options in light of their initial ratings and after the meeting the group members individually re-rate the options. The Consensus Conference differs from the Delphi and Nominal Group methods in that agreement is sought using less complex methods, such as a simple majority vote, and there is the additional aim of discussing the issues at a public meeting. Which method is chosen often depends on whether the participants are able to attend a meeting or conference (Nominal Group or Consensus Conference methods), or are not (Delphi method). For logistical reasons (see this chapter section 3.2.4.3 page 91) a Delphi consensus exercise method was selected for this study.

### **3.2.3.2 Delphi consensus exercise methodology**

A Delphi consensus exercise comprises: an ideas generation round in which items to be considered in the exercise are identified, and two or more consensus rounds to gain agreement.<sup>130, 131</sup> The number of consensus rounds undertaken in consensus exercises is variable<sup>130, 132</sup> and, although logic would suggest that rounds should continue until agreement is reached, most consensus studies are limited to two consensus rounds.<sup>130-132</sup>

#### *Participants and tasks*

Participants in consensus exercises are in the main selected because they are considered to be appropriate experts for the task.<sup>62, 130</sup> However, appropriate expertise can differ: it may be the clinical expertise of a particular group of healthcare professional, or the research expertise of a group of academics, or the expertise of a lay group who are “expert” in living with a condition. In addition, the expertise for the ideas generation round may not be the

same as for the consensus rounds, and different participants can be involved in each. For example, in a consensus exercise on the management of acute coronary syndrome, expertise for the ideas generation round might be an in depth knowledge of the latest research findings in the field, whereas the expertise for the consensus rounds might be relevant clinical experience in managing the condition.<sup>130</sup> Participant selection requires careful consideration by those undertaking the consensus exercise, so that participants have the necessary knowledge and skills to undertake the exercise and have credibility with the target audience for the consensus recommendations.<sup>130</sup>

The tasks for participants in consensus exercises are: i) in the ideas generation round to suggest and debate which items (the propositions on which agreement is to be sought) the consensus exercise should consider, ii) in the consensus rounds to: a) initially rate the items (round 1), b) in second and subsequent rounds receive feedback on their ratings (and those of the other participants) from the previous round, and c) in light of this feedback re-rate the items.

#### *Consensus questionnaire*

In the consensus rounds the items for consideration are listed in a consensus questionnaire which is completed by the participants in the consensus rounds. The questionnaire is composed of: i) an introduction to the task, ii) instructions on completing the task, iii) the items to be considered by the consensus exercise, which are usually in the form of a list of statements about the area of practice, iv) a grid for rating the statements, and v) in rounds subsequent to the first consensus round, ratings of statements by the individual and the group in the previous round. In some consensus exercises, statements which fail to reach a certain level of consensus are not included in subsequent rounds.

### **3.2.4 Who should develop and agree the content of the model OA consultation?**

The proposition stated above (see section 3.2.1.3 page 84) was that the development of a patient-centred consultation should include the two parties to the consultation: the patient and the healthcare professional. For the development of a model OA consultation, the two relevant parties were patients with OA and GPs, and their expertise would need to be called upon in the consensus exercise. Consideration was given as to how to include these two groups in the consensus exercise.

#### **3.2.4.1 Patient group**

The expertise required of this group was an “expertise by experience”,<sup>q</sup> that of knowing about and living with OA. Potential members of this group were: i) people with OA, ii) carers of people with OA, and iii) people who provide support for people with OA, such as staff of Arthritis Care helpline.<sup>r</sup> The Arthritis Research UK Primary Care Centre at Keele University had three resources with which to identify potential patient group members: i) a Research User Group, ii) a Virtual User Panel and iii) a database of people with musculoskeletal problems. The user group and panel consisted of people who have musculoskeletal conditions, many with OA, and who have indicated they would like to work with the Centre. Their principal role is advisory rather than undertaking studies, but panel members do participate in studies to get a better understanding of being a participant and to comment on new methodologies (as this consensus exercise with lay members was) undertaken at the Centre. The database is of previous respondents to Centre studies who have musculoskeletal problems and have indicated that they would be interested in undertaking

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<sup>q</sup> An “expert by experience” in the context of healthcare has been defined as a person who has experience of a medical condition and “has gained specific expertise in living with this” condition.<sup>133</sup>

<sup>r</sup> Arthritis Care is a UK charity which provides support for people with arthritis and runs a telephone helpline service for people with arthritis to provide information and support. Website <http://www.arthritiscare.org.uk/> (accessed 11/07-2014)

further research studies. The user groups and database provided a readily identifiable pool of “experts” for the patient group.

#### **3.2.4.2 GP Group**

The expertise for this group was that of caring for people with OA in general practice, an expertise particularly found in GP members of the Primary Care Rheumatology (PCR) Society.<sup>s</sup> Delegates to the PCR Society annual conference in 2004 had undertaken a nominal group consensus exercise to develop a model of care for the management of knee OA, a model which was subsequently utilised in a survey of the care received by adults with chronic knee pain (described in chapter 1 section 1.6 page 27).<sup>53</sup> One of the findings of this survey, that there was a gap between recommended management of OA and care which patients with OA reported receiving, informed the development of the MOSAICS trial. In view of their known expertise and demonstrated interest, it was decided to revert to this group in developing the model OA consultation for use in a trial investigating ways of bridging this gap.

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#### **3.2.4.3 Consensus methodology appropriate for these groups**

For logistical reasons it was not possible to invite GP members of the PCR Society to attend a meeting or for the research team to attend one of their conferences, to undertake a nominal group consensus exercise. Nor was it practical for all members of the patient group to attend a single meeting at the centre. It was decided therefore that a Delphi consensus exercise would be the most appropriate method to choose for the consensus exercise in this study.

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<sup>s</sup> The PCR Society was set up in 1986 for healthcare professionals with an interest in managing musculoskeletal problems in primary care to provide professional education, improve inter-professional communication and initiate research studies. Website [www.pcrsociety.org](http://www.pcrsociety.org) (accessed 11/07/2014)

The consensus rounds would be undertaken separately by the two groups so that both the agreed views of GPs, and the agreed views of patients could be obtained and compared.

### **3.2.5 Summary of considerations informing model OA consultation development**

The considerations described above informed the approach taken in developing a model OA consultation, such that its development would need to:

1. Be informed by the
  - a. WISE model for self-management support
  - b. Recommendations of the 2008 NICE OA Guideline
  - c. Other components of the MOSAICS trial intervention (OA guidebook and OA clinic)
  - d. Calgary-Cambridge consultation framework
2. Limit the target of the consultation to the
  - a. Assessment of older people with peripheral joint pain
  - b. Specific OA consultation tasks (and not generic consultation tasks)
3. Seek to gain the views of both people “in the consultation”: GPs and patients
4. Adopt consensus exercise methodology
  - a. Using the Delphi method
  - b. To determine consensus in a GP group, and in a patient group.



### 3.3 Methods

A Delphi consensus exercise with an ideas generation round and two consensus rounds was undertaken in four stages (box 3.1).

Stage 1 Ideas generation round
Phase 1- Initial ideas generation by research team
Phase 2 – Establishment of advisory group
Phase 3 – Advisory group meeting (Arthritis Care helpline team members)
Phase 4 – Advisory group email consultation exercise (other advisory group members)
Phase 5 - Collation of comments from phases 3 and 4 and development of the final list of items for the consensus exercise.
Stage 2 Development of common consensus questionnaire for GP and patient groups
Stage 3 Consensus rounds undertaken separately by GP and patient groups
Phase 1 Establishment of GP and patient groups
Phase 2 Undertaking consensus rounds 1 and 2
Stage 4 Establishing criterion for consensus (level of agreement needed for a task to be included in the model OA consultation)

Box 3.1 Stages of consensus exercise and phases of stages 1 and 3

The exercise involved the development of a single consensus questionnaire which was used for both the GP group and the patient group. Both groups were mailed the same questionnaire in round 1 but in the second round the questionnaires only contained feedback on their group's round 1 ratings (figure 3.2).

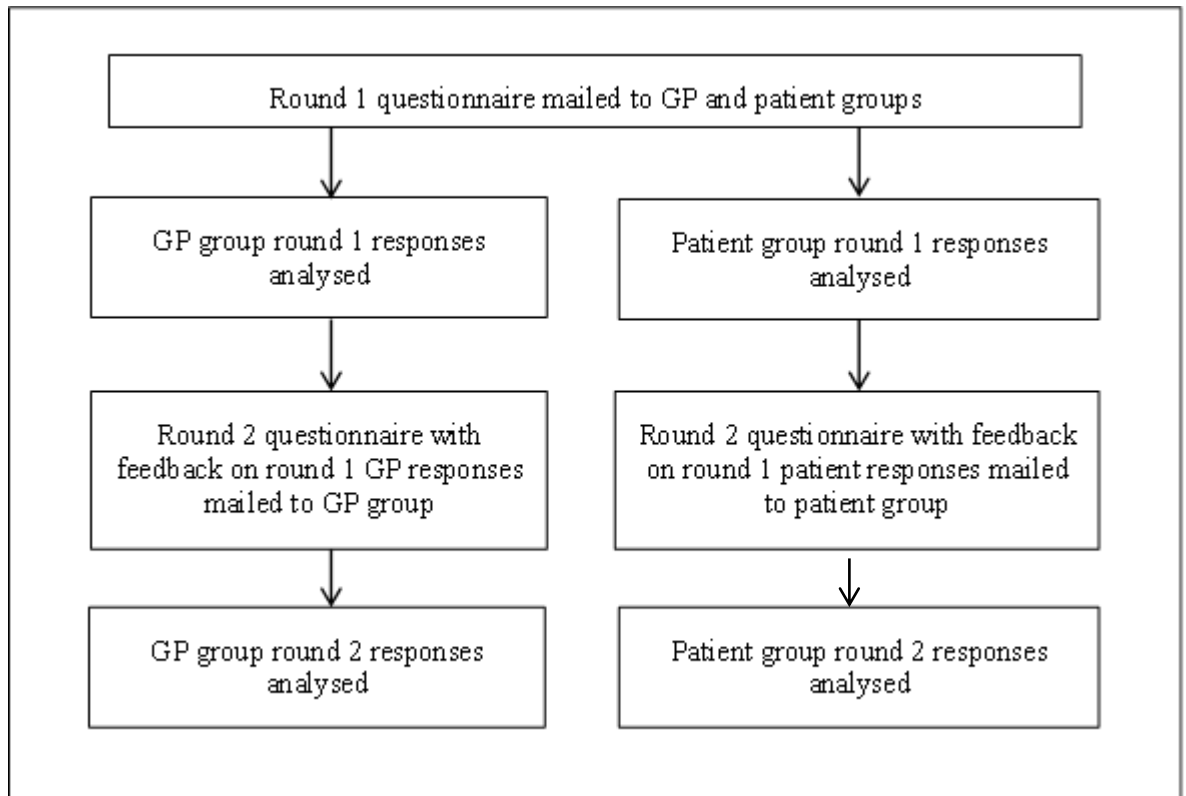


Figure 3.2 Schema of consensus exercise undertaken separately in GP and patient groups

An application for ethical permission to undertake the consensus exercise was submitted to South Manchester Research Ethics Committee and a favourable ethical opinion was given on 12 February 2009 (appendix 3.1 page 336). Permission was sought and obtained from North Staffordshire Primary Care Trust (PCT) to undertake the study at the Arthritis Research UK Primary Care Centre (the centre is part of the North Staffordshire Primary Care Research Consortium which is hosted by the PCT).

### 3.3.1 Stage 1 Ideas generation round

The objective of the ideas generation round was to develop the list of statements for inclusion in the consensus questionnaire for the consensus rounds. The ideas generation round consisted of five phases (box 3.1).

### **3.3.1.1 Phase 1 - Initial ideas generation**

A preliminary set of items to be included in the consensus questionnaire was generated by a small group of Centre researchers who were invited to consider which tasks could be undertaken when an older adult initially presents with peripheral joint pain to his or her GP. The generation of the list of items was informed by:

- The requirements for the OA consultation as a component of the MOSAICS trial intervention
  - To offer a patient centred approach
  - To promote NICE core treatments for OA
  - To focus on the specific tasks and skills for the management of OA
- The Calgary-Cambridge framework (initiating the session, gathering information, physical examination, explanation and planning, and closing the session)

The list of statements was iteratively developed over several meetings of this small group and was ordered by the Calgary-Cambridge framework. The output from this process was a draft list of items for the consensus exercise, consisting of 34 items (appendix 3.2 page 343).

A draft scenario of what the group felt to be a “typical” patient presenting with a peripheral joint problem was developed by the group (box 3.2). The scenario was of a patient presenting with a problem at one specific joint (the knee), rather than any peripheral joint. This approach was taken to simplify the consensus exercise task: participants would be asked to consider the consultation tasks for the assessment and treatment of a problem in one specific joint rather than any peripheral joint. The knee joint was chosen as this is the site which OA most

commonly affects. “A problem with her knee” rather than knee pain was used as the group felt that it was not uncommon for people to present with other symptoms (stiffness, locking or giving way) or functional, or mobility, problems and not just with pain.

A 63 year old woman attends her GP for the first time with a problem with her knee. The problem has worsened over the past few months and she has come to ask for help with coping with it.

Box 3.2 Draft Scenario for the model OA consultation consensus exercise

### **3.3.1.2 Phase 2 - Establishment of ideas generation round advisory group**

The inclusion criteria for the ideas generation round advisory group were professionals who were expert in the management of OA or lay people with “expertise of experience” in what it is like to have the condition. The following people were invited to be members of the ideas generation round group:

- Research staff (those with specific expertise in the assessment or treatment of OA) at the Arthritis Research UK Primary Care Centre at Keele University
- Former members of the 2008 NICE OA Guideline Development Group (GDG)
- Members of the Arthritis Care helpline team

The first two groups of potential members were approached by email, the latter group through a personal contact at Arthritis Care (the manager of the helpline). A group of 27 professionals (ten GPs, five physiotherapists, four rheumatologists, three nurses, three

occupational therapists and two social scientists) and seven lay people took part in the advisory group.

#### **3.3.1.3 Phase 3 – Advisory group meeting (Arthritis Care helpline team members)**

The meeting with the Arthritis Care helpline team took place on 27<sup>th</sup> March 2009 at the offices of the charity in London. Three members of the research team facilitated the meeting and seven members of the helpline team attended. An overview of the MOSAICS study was presented (appendix 3.3 page 346) - to put the model OA consultation into context – before the group considered, and made comments on, the draft scenario and list of tasks for the consultation from phase 1. The comments and additions made during the meeting were recorded and written up afterwards. This record of the meeting was used in phase 5.

#### **3.3.1.4 Phase 4 – Advisory group email consultation exercise (other advisory group members)**

An email was sent to Centre research staff and former members of the NICE OA GDG, inviting them to participate in an online survey developed for this phase. They were asked initially to read a short word document which outlined the background to the study and the task for the ideas generation round, and which included the phase 1 draft list of statements (appendix 3.2 page 343), and were then invited to comment on, and make additions to, the draft list. After each statement there was a box to comment on the statement and at the end of each section they were prompted to suggest any additional tasks to be included in the section. A reminder email was sent after two weeks. Responses were obtained from 21 Centre research staff and six former GDG members.

### **3.3.1.5 Phase 5 – Consideration of responses and development of final item list**

The responses from phases 3 and 4 were considered by the research team at two meetings. The comments were considered on an item by item basis and revisions to the items made in light of comments and the rationale for each revision was recorded. Proposals for additional tasks, comments on the order of the tasks, the general layout and structure of the draft questionnaire, were also considered. Following the meeting a detailed table (appendix 3.4 page 347) was compiled listing: i) the draft items, ii) the revised and additional items, iii) additional information to be included in the questionnaire and iv) comments on, and rationale for, changes made.

In summary the following changes were made: i) the number of items for consideration in the consensus exercise was increased from 34 to 61, ii) the scenario was slightly modified (the gender of the patient was omitted and the age of the patient reduced to 57 years) and iii) additional information was added to guide the participant through the consensus exercise.

The revised list of items was then reviewed for consistency and readability, and minor changes were made to phrasing and ordering of the items. Specific attention was paid to eliminating, or explaining, medical jargon: the items needed to be understood by members of the patient group. The final scenario, list of items and guiding information were agreed by the research team for inclusion in the consensus questionnaire (example shown in appendix 3.5 page 348).

### **3.3.2 Stage 2 - Consensus questionnaire development**

It was initially envisaged that, in each consensus round, the participants would be asked to consider which items (consultation tasks) should be included in an initial ten-minute consultation when an older patient presents with a knee problem. However, having generated a list of 61 items for consideration in the consensus exercise, it was felt that in round 1 deciding which items should, or should not, be in a ten-minute consultation would be onerous: i.e. asking participants, on first sight of an extensive list, to prioritise items for inclusion in a time-limited consultation. A two-step approach to development of the model OA consultation therefore was adopted: in round 1, participants were asked which items they would include if time was no object, and in round 2, which of these they would include in a ten-minute consultation. It was anticipated that items which would “not be included” from round 1 would be omitted from the list of items for consideration in round 2; making the round 2 task less onerous for participants. To operationalise this approach, participants were asked in round 1 to imagine that the GP could give the patient at least 30 minutes, or that some of the tasks could be undertaken at a second appointment. In addition, they were told that in round 2 they would be asked to consider what should be included in a ten-minute consultation – so informing them of the two-step approach.

A five-point Likert rating scale <sup>134</sup> was selected to record participants’ ratings (their opinion as to whether an item should or should not be included). The Likert categories were: definitely included, probably included, undecided / not sure, probably not included and definitely not included. A “don’t know” option was included since the consensus exercise was being undertaken by a patient group and it was felt that some of the participants from this group may, because of their level of expertise, have felt that they did not know whether an item should be included, rather than being undecided or unsure.

In round 2 the questionnaire provided feedback on round 1 ratings specific to the individual participant. For each item, the questionnaire indicated how the individual participant had “voted” in round 1 and how the group <sup>t</sup> as a whole had voted. Participants were asked to re-rate the items in light of this feedback for inclusion in a ten-minute consultation.

The questionnaire also included questions about the expertise of the two consensus groups and the demography of the GP group (already known for the patient group from survey responses or registration with the Research User Group) (see appendix 3.5 page 348 – example of consensus questionnaire).

The final consensus questionnaire consisted of:

- i) An introduction to the exercise and the task,
- ii) A statement on what underpinned the consultation (the NICE 2008 OA Guideline recommendations, a guided self-management approach and the provision of an OA guidebook and a follow-up appointment with a specially trained healthcare professional)
- iii) Two figures outlining the NICE OA treatment recommendations and the MOSAICS trial intervention
- iv) Detailed instructions on how to complete the task
- v) Items for rating
- vi) Demographic questions
- vii) Consent form

An example of the questionnaires (lay group round 1) is shown in appendix 3.5 page 348.

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<sup>t</sup> GP or patient group – depending on which group the participant was a member of.



### **3.3.3 Stage 3 - Consensus rounds undertaken by GP and patient groups**

#### **3.3.3.1 Phase 1 - Establishment of GP and patient groups**

The inclusion criteria were: i) for the GP group, GPs with expertise in managing OA, and ii) for the patient group that of “expertise of experience” in what it is like to have the condition.

##### *GP group*

Participation in the GP group for the consensus rounds was invited from delegates attending the 2008 PCR Society annual conference. The study was presented during a plenary session at the conference and delegates were invited to register an expression of interest in being a member of the group by filling in a form circulated during the conference. Those who had expressed an interest were subsequently invited to participate by email.

##### *Patient group*

The following people were invited to be a member of the patient group:

1. Participants in a longitudinal cohort study (from the database described above) who had:
  - a. Responded to the six year follow-up questionnaire in 2009
  - b. Agreed to be contacted regarding further research
  - c. Indicated on the follow-up questionnaire that they had knee pain
2. Members of the Research User Group and the Virtual User Panel (described above)

Invitees attended a meeting to explain the study before undertaking the consensus exercise (see section 3.3.3.2 below)

##### *Sample size calculation*

A consensus methods review <sup>130</sup> stated that consensus groups should have between 6 and 12 members. If fewer than this, reliability declines, whereas little further is gained by having more than 12 contribute to the final consensus round. Assuming a 70% response to each round (60% for GPs), and two consensus rounds, sample sizes needed for the two consensus groups were calculated as: patient group (n = 25), GP group (n = 35).

#### *Composition and characteristics of GP and patient groups*

Thirty-two GPs expressed an interest in participating in the consensus exercise following the PCR Society conference. Nineteen potential patient group members attended the meeting to explain the study, and four were contacted by phone. All potential patient group participants subsequently agreed to participate in the study.

The consensus exercise was completed by 15 GP group members and 14 patient group members, an overall response of 47% and 61% respectively, details given in table 3.1.

	GP Group	Patient Group
<b>Round 1</b>		
Mailed questionnaire	32	23
Returned questionnaire (% response)	16 (50)	14 (61)
<b>Round 2</b>		
Mailed questionnaire	16	14
Returned questionnaire (% response)	15 (94)	14 (100)
<b>Rounds 1 and 2</b>		
Completed exercise (overall % response)	15 (47)	14 (61)

Table 3.1 Consensus rounds mailings and response by group

#### Characteristics of the GP group

The characteristics of the GP group members are shown in table 3.2 All the GPs declared a special interest in musculoskeletal medicine and a clear majority (80%) had been qualified as a GP for five years or more. Most GPs: i) were “full time”, ii) undertook dedicated sessions for musculoskeletal problems (normally one or two such sessions a week), and iii) worked in large (a list size over 7 000) urban training practices.

Characteristic	No. (%)* GP Group members (n=15)
Female	6 (40)
Musculoskeletal specialist interest	15 (100)
Qualified as a GP for 5yrs or longer	12 (80)
Undertake dedicated musculoskeletal sessions	11 (73)
If undertaken, 1 or 2 musculoskeletal sessions a week	9 (60)
Work, in total, four or more days a week (“fulltime”)	12 (80)
Practice type – urban / rural / mixed	10 (67) / 1 (7) / 4 (26)
List size greater than 7 000	10 (67)
Undergraduate or postgraduate training practice	14 (93)

\* denominator for percentage calculation for all characteristics is total number in group (15)

Table 3.2 Characteristics of GP consensus group

### Characteristics of patient group

Characteristics of patient group members are shown in table 3.3. The mean age of group members was 72 years (interquartile range 67 to 76, range 59 to 91). Almost all of the members (93%) reported having OA and a clear majority, but not all, (79%), had consulted about the problem.

Characteristic	No. (%) <sup>*</sup> Patient group members (n=14)
Female	6 (43)
Reported “having osteoarthritis”	13 (93)
If “have osteoarthritis”, ever consulted GP or other HCP for osteoarthritis	11 (79)
If ever consulted, consulted GP or other HCP in last year	9 (64)
Look after someone with osteoarthritis	3 (21)

<sup>\*</sup> denominator for percentage calculation for all characteristics is total number in group (14)

Table 3.3 Characteristics of patient consensus group

### 3.3.3.2 Undertaking consensus rounds 1 and 2

#### *Patient group awareness training*

Although consensus exercises had been undertaken previously at the Research Centre,<sup>62, 131, 135, 136</sup> this was the first time a consensus exercise had been conducted with lay participants. The Patient and Public Involvement (PPI) coordinator and PPI support worker felt that lay participants might have difficulty understanding and undertaking such an exercise and that they would benefit from awareness training to orientate them to the exercise.

Prior to the round 1 mailing each potential member of the patient group was invited to attend a meeting at the Research Centre when the background and mechanics of the study were explained and at which attendees were invited to complete an example of the sort of questionnaire which they would later be asked to complete. Any questions attendees had were answered, and at the end of the meeting their agreement to participate in the study was confirmed. The meeting lasted just under an hour and travel expenses were paid if requested. If a potential participant was unable to attend the meeting they were contacted individually by telephone to explain the study, orientate them to the task of undertaking the consensus exercise, answer any questions and confirm their willingness to take part.

#### *Logistics for questionnaire mailings and data handling*

The round 1 questionnaire was mailed on 10/08/2009 to both GP and patient groups, and a reminder sent at two weeks to participants who had not returned the questionnaire. All questionnaires which had been received by the 14/09/2009 (five weeks after the initial mailing) were included in the analysis, and questionnaires received after this date were not analysed.

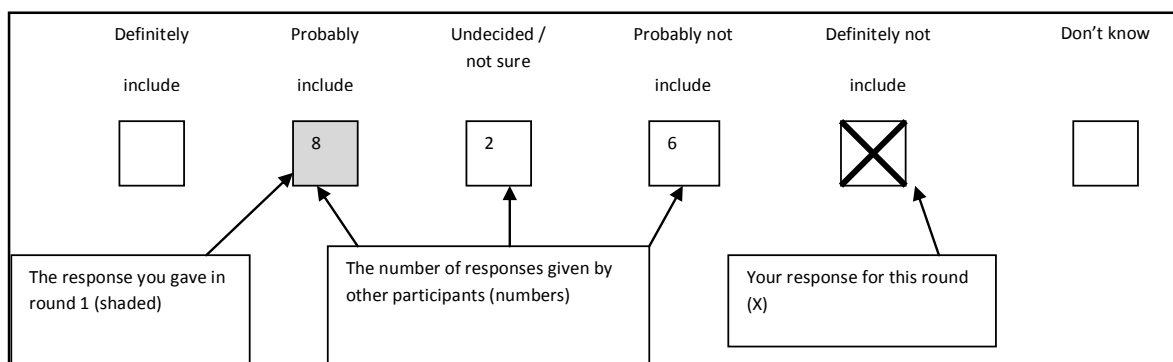
Round 2 questionnaires were mailed on 20/10/2009 to all participants whose responses had been analysed in round 1, and a reminder sent at two weeks. Round 2 questionnaires which had been received by 1/12/2009 were included in the round 2 analysis.

A secure password protected database was used for the mailing, and the ratings from the two rounds were recorded in a separate secure database. The latter database did not contain any identifiable personal details and participants were identified by a research code. This code enabled their study data to be linked to their mailing details in the “mailing database” to enable the personalised round 2 questionnaires to be sent out.

#### *Analysis of consensus round responses*

The responses for the GP group and the patient group were analysed separately, but in the same manner.

In round 1, for each item, the responses for each Likert response (and the “don’t know response”) were totalled and shown on the round 2 questionnaire as number of participants who had responded to that Likert response (see Box 3.3 below).



Box 3.3 Example of Likert rating scale participants would be presented with in round 2, explaining how the round 1 responses were presented, and how they would respond in round 2

In round 2 the proportion of participants who responded to each Likert response was calculated for each item. Participants who had responded “don’t know” to an item, or for whom there was missing data for the statement, were excluded from the denominator for that item.

To calculate the level of agreement, the definitely / probably responses were combined as it was considered that both responses indicated that a participant would “include” the item. For example, 80% agreement in a group to include an item was reached if 80% of the group considered that the item should definitely, or probably, be included. As the responses from the two groups were analysed separately, the level of agreement for inclusion of any one item could differ between the two groups.

### 3.3.4 Stage 4 – Establishing criterion for consensus: level of agreement needed for inclusion of a task in the model OA consultation

The level of agreement used to define consensus is often arbitrary.<sup>130</sup> Some studies have “set the bar” for agreement at the level of a simple majority, while others have set the bar higher.<sup>130</sup> The criterion for consensus for this study was informed by the study’s core

objective, which was to identify a set of consultation tasks which could realistically be undertaken in a 10-minute consultation, rather than being based on an arbitrarily predefined level of agreement for a task to be included in the model OA consultation. In order to “set the bar”, an analysis of the number of items which would result from the bar being set at differing levels of agreement (100%, 99-90%, 89-80%, etc.) was undertaken.

The bar was set at the same level for both the GP and the patient group for consistency, and an item was included if either group, or both groups, included it at or above the level of the bar. Finally, to re-iterate, the level of agreement ultimately determined for the consensus exercise was chosen as the level at which the number of tasks included could be realistically be undertaken in a 10-minute consultation.

#### **3.3.4.1 Number of items included in model at differing levels of agreement**

The GP group demonstrated a high level of agreement for inclusion for many of the items (table 3.4). The patient group had a high level of agreement for fewer items (table 3.4). The cumulative number of items which would be included at differing levels of agreement was determined for both groups (table 3.4).

Level of agreement for inclusion (%)	GP Group			Patient Group		
	No. of items	Cumulative level of agreement (%)	No. of items cumulatively included	No. of items	Cumulative level of agreement (%)	No. of items cumulatively included
100	11	100	11	2	100	2
90 – 99	14	>=90	25	4	>=90	6
80 – 89	4	>=80	29	5	>=80	11
70 – 79	5	>=70	34	10	>=70	21
60 – 69	8	>=60	42	16	>=60	37
50 – 59	3	>=50	45	9	>=50	46
<50	16			15		

Table 3.4. Number of items by level of agreement and cumulatively included for consensus groups

### 3.3.4.2 “Setting the bar” for inclusion in the model consultation

Using the data from just the GP group, as the GP group included many more items at every level than the patient group, if the bar was set at 100% then 11 items would be included. If the bar was lowered to 90% then a further 14 items would be included, resulting in 25 items included in total. Lowering the bar to 80% would add an additional five items resulting in 30 items being included. From this analysis and considering the items as the consultation tasks they described, if the bar was set at 100% fewer tasks (11 tasks) than could be comfortably undertaken in a 10-minute consultation would be included, but setting it at 90% a realistically do-able number of tasks (25 tasks) would be included. <sup>u</sup> Lowering the bar further would increase the number of tasks to be included and would result in more tasks being included than could realistically be undertaken in 10 minutes. For this reason it was decided to set the bar at 90% - a high level of agreement at which the number of tasks included could be realistically undertaken in a 10-minute consultation.

<sup>u</sup> The six tasks included by the patient group with the bar at 90% were all contained in the set of 25 tasks the GP group included, so that setting the bar at 90% for the patient group did not include additional tasks.



## **3.4 Results**

### **3.4.1 Tasks for inclusion in the model OA consultation**

The 25 tasks (items) with a level of agreement of 90% or more in either group, or both groups, for inclusion in the model OA consultation are shown in table 3.5. The first 12 tasks in the model detail the preferred approach by the groups to taking the history and examining the patient. The rest of the tasks give advice on the approach to giving and explaining the diagnosis, providing support for self-management and addressing the patient's need for analgesia. There were two tasks unanimously included by both groups (100% agreement for inclusion in both groups): i) enquiry about the patient's need for painkillers and ii) recommending paracetamol and/or topical non-steroidal anti-inflammatory drugs (NSAIDs) to address this need.

<b>Task <sup>1</sup></b>	<b>No. (%<sup>3</sup>) GP group would include (n=15)</b>	<b>No. (%<sup>3</sup>) Patient group would include (n=14)</b>
<b>The GP: <sup>2</sup></b>		
Encourages the patient to give a full account of the problem(s), including the reason for coming today	15 (100)	11 (79)
Finds out how long the patient has had the knee problem for and whether the problem comes and goes	14 (93)	12 (86)
Asks specific questions about the amount and type of any pain	14 (100)	11 (79)
Asks about other knee symptoms such as stiffness, locking and giving way	13 (93)	12 (86)
Asks about problems with mobility, such as walking, going up and down stairs, and getting in and out of a chair	13 (93)	9 (64)
Asks if, and how, the knee problem affects activities such as work, hobbies, sports and general leisure activities	14 (100)	7 (50)
Asks about previous problems with the knee, knee operations, knee injections	13 (93)	11 (79)
Asks about problems with other joints, especially the other knee and the hips	14 (93)	8 (62)
Asks about the patient's ideas, concerns, fears and feelings about the problem	14 (93)	7 (54)
<b>Asks if the patient has tried anything to help the problem, and if yes, what / how used / how effective</b>	<b>15 (100)</b>	<b>12 (92)</b>
Checks if there is anything in the patient's story to suggest a fracture, cancer, inflammatory or septic arthritis	14 (93)	7 (54)
Examines the knee joint and surrounding tissues	15 (100)	11 (85)
<b>Informs the patient that the most likely reason for the problem is osteoarthritis and explains the reason(s) for coming to this diagnosis</b>	<b>15 (100)</b>	<b>12 (92)</b>
<b>Gives a brief explanation of osteoarthritis</b>	<b>14 (93)</b>	<b>12 (92)</b>
Asks if the patient has any unanswered questions	15 (100)	8 (57)
Hands the guidebook to the patient with the advice to read it	14 (93)	8 (62)
Encourages the patient to consider the use of "NICE core treatments", increased physical activity / muscle strengthening exercises / dietary changes to lose weight, if needed	14 (93)	10 (77)
Emphasises, when relevant, the benefit of losing weight: that if weight is lost then the pain reduces	14 (93)	10 (77)
Emphasises, when relevant, the benefit of exercise in helping to lose weight in addition to the benefits for osteoarthritis	14 (93)	8 (62)
<b>Enquires about the patient's need for painkillers</b>	<b>15 (100)</b>	<b>13 (100)</b>
<b>Recommends the use of paracetamol and/or topical NSAIDs (creams or ointments) before the use of other painkillers</b>	<b>15 (100)</b>	<b>13 (100)</b>
Summarises the management plan and re-checks that it is acceptable to the patient	14 (93)	9 (64)
<b>Advises the patient to make a follow up appointment with the specially trained healthcare professional</b>	<b>15 (100)</b>	<b>13 (93)</b>
Uses free-text to record the consultation in the paper/electronic records	14 (93)	8 (67)
In addition to statement above records coded data on the; i) diagnosis and ii) main elements of the consultation, such as the level of pain, the BMI and advice to exercise	15 (100)	10 (77)
1 Task in bold if 90% or more agreement in BOTH groups		
2 "The GP" is the stem for all the statements		
3 "Don't know" treated as missing data and not included in the denominator for percentage calculation		

Table 3.5 Tasks for inclusion in the model OA consultation

### 3.4.2 Tasks not for inclusion in the model OA consultation

With a level of agreement for inclusion set at 90% or more, 36 tasks were not included in the model OA consultation (table 3.6).

<b>Task</b>	<b>No. (%<sup>2</sup>) GP group would include (n=15)</b>	<b>No. (%<sup>2</sup>) Patient group would include (n=14)</b>
<b>The GP:<sup>1</sup></b>		
Assesses the degree of pain using a formal measure, such as rating the pain on a scale from 0 to 10	1 (7)	8 (57)
Assesses the extent of mobility problems using a formal measure, such as a rating scale from 0 to 10.	1 (7)	7 (50)
Asks about a family history of joint problems	6 (43)	4 (29)
Asks about jobs which may have affected / caused the knee problem, such as those involving a lot of kneeling (for example, carpet fitter, cleaner, joiner, electrician)	9 (64)	5 (36)
Asks about the patient's expectations of the consultation	10 (67)	4 (31)
Asks which problem, concerning the knee, the patient wants help with most, for example pain, stiffness or climbing the stair	9 (60)	5 (38)
Asks about who the patient has seen, or asked for help from, about the problem	10 (71)	6 (46)
Assesses the patient's mood for symptoms of anxiety and depression	8 (53)	1 (8)
Screens the patient for depression using a formal depression screening tool	0 (0)	0 (0)
Asks about other conditions, such as diabetes, heart or kidney disease, which might affect the management of the knee problem	10 (67)	9 (64)
Asks about circumstances, such as unemployment and financial hardship, which might affect the management of the knee problem	5 (33)	0 (0)
Assesses the knee joint by general observation of the patient's walking pattern, mobility and footwear	13 (87)	9 (69)
Performs a specific test, such as a timed walk test, to assess function	0 (0)	3 (21)
Examines the other knee, hips and hands for signs of osteoarthritis	11 (73)	10 (71)
If not recently done, measures weight and height to calculate the body mass index	6 (40)	6 (46)
Undertakes a full examination of the locomotor system (of the joints and muscles)	0 (0)	4 (33)
Enquires about the patient's views and understanding of osteoarthritis	13 (87)	9 (75)
In addition to giving a brief explanation explains the likely cause of osteoarthritis	4 (27)	9 (69)
In addition to giving a brief explanation explains the likely outcome for people with osteoarthritis	9 (60)	8 (62)
Explores the patient's understanding of the information given, and their reaction / beliefs / feelings about it	8 (53)	8 (62)
Tells the patient that they are central to the management of their own condition: that self-management of osteoarthritis is necessary and important	13 (87)	11 (85)
Explains that the central role of the primary healthcare team in the management of osteoarthritis is to support and guide self-management	7 (47)	9 (69)
Explains the purpose of managing osteoarthritis to: improve understanding, reduce pain, improve mobility and reduce the risk of it getting worse	9 (60)	12 (86)
Explains the approach to the treatment of osteoarthritis recommended by NICE	3 (20)	8 (62)

In addition to handing out the guidebook highlights sections in the guidebook relevant to the patient's problem	6 (40)	6 (46)
Asks if the patient has any views / preferences for what treatment they might want to consider next, and, if they do, what they are	12 (80)	6 (43)
Takes an "exercise history": the patient's attitude to taking exercise / physical activity / exercises and their experience of these	9 (60)	6 (43)
Takes a "weight history": the patient's attitude to losing weight and their prior experience of doing this	7 (47)	9 (69)
Indicates, if the patient is overweight, where they are on a body mass index chart	7 (47)	9 (69)
Explains that exercise may cause muscle soreness initially and that the benefits of exercise may not be immediate	9 (60)	5 (38)
Explains the risks and benefits of painkillers	11 (73)	6 (50)
Discusses with the patient whether any other extra treatment needs to be considered	7 (47)	8 (67)
Discusses appropriate referrals, for example to; physiotherapy, occupational therapy, podiatry, social services, community pharmacy, district nursing service or work support services	8 (53)	10 (71)
Discusses the option of joint replacement surgery in patients with established severe pain, or severe functional limitation, in addition to core treatments and painkillers	7 (47)	7 (54)
Formulates with the patient a self-management plan	11 (73)	10 (77)
Explains when the patient should re-consult the GP	11 (73)	8 (57)

1 "The GP" is the stem for all the tasks

2 "Don't know" treated as missing data and not included in the denominator for percentage calculation

Table 3.6. Tasks not for inclusion in the model OA consultation

## 3.5 Discussion

### 3.5.1 Summary of main findings

The consensus exercise determined that 25 tasks be included in the model OA consultation.

The included tasks cover assessment of chronic joint pain, assessment of patient's ideas and concerns, exclusion of red flags, examination, provision of diagnosis and written information, promotion of exercise and weight loss, initial pain management, and arranging a follow-up appointment. The level of agreement for including tasks differed between the two groups: in the GP group there was a high level of agreement to include many of the tasks proposed for the model consultation but in the patient group there was a high level of agreement to include only a few of the tasks proposed.

### **3.5.2 Comparison of consensus exercise findings with existing literature**

The items included in the consensus study for the model OA consultation cover both the assessment of the problem and its treatment if a diagnosis of OA has been made. This is to the author's knowledge the first study using consensus methodology to determine the optimal items for such a consultation. Two trials <sup>137, 138</sup> have previously evaluated the effect of a standardised approach to consulting for OA. One of these <sup>137</sup> included both assessment and treatment, but in both studies the content of the consultation was developed by a group of experts through discussion and reference to published guidelines, and the methodologies for these have not been published. Standard textbooks on clinical methods <sup>139, 140</sup> are focussed primarily on the examination rather than history taking and do not cover in detail the assessment of peripheral joints in older people. A textbook on the 10-minute clinical assessment <sup>141</sup> includes, in the section on the assessment of knee pain, many of the tasks with a high level of agreement for inclusion in the model OA consultation such as eliciting ideas and concerns, taking a "pain history" and understanding the effect of the problem on mobility and work.

In the present study, the two tasks given the highest priority, those which all the participants from both groups included, concerned the pharmacological management of pain. The groups did not prioritise psycho-social tasks such as assessing mood and asking about social circumstances, suggesting that both groups favoured a bio-medical approach to the initial consultation rather than a biopsychosocial one. This suggests a discordance between "current thinking" of practising GPs, and the views of patients, and "current best thinking" from research evidence, which suggests that an integrated biopsychosocial approach should be adopted for OA. <sup>1</sup> A number of possible reasons for this discordance might include; primary consideration of the practicalities of what can be achieved in a 10 minute consultation rather

than “ideal content”, GPs’ lack of awareness of this research, and the influence of a prevalent bio-medical approach to osteoarthritis.<sup>142, 143</sup> However the relevance of psychosocial management to clinical management of OA has yet to be established, and may not feature in the GPs’ perceptions of the most important clinical priorities in a first consultation for such a problem. There is in fact some previous research evidence in other clinical areas of similar patient views supporting a biomedical approach for initial consultations for a problem. Calnan et al<sup>144</sup> found that patients’ explanations for upper limb disorders were initially biomechanical, with psychosocial explanations only being invoked when these were no longer appropriate. Interestingly, in the present study, neither of the two groups prioritised tasks eliciting patient expectations, which is counter to a patient-centred approach propounded in the biopsychosocial approach, or in current notions of the “patient-as-person”, sharing power and responsibility and therapeutic alliance.<sup>145</sup>

### **3.5.3 Strengths and limitations of this study**

The inclusion of lay people in the consensus exercise represents a particular strength of this study, and that their opinions were separately analysed. The levels of agreement for the statements were lower and more varied in the patient group than the GP group and, by “setting the bar” at the same level for both groups, the GP group contributed more tasks to the model than the patient group. However, the majority of the patient group were in favour of including all the 25 consultation tasks in the model and lowering the bar in the patient group to 80% would only have included two additional tasks (telling the patient that they are central to the management of their own condition and explaining the purpose of managing OA). The consensus exercise could have been conducted with one group consisting of both GPs and lay people so that a single view on which tasks should be included in the model consultation could have been obtained. However, this would have resulted in a

heterogeneous group, and such groups are recommended when the aim is to identify and explore areas of uncertainty rather than to define areas of agreement, for which homogenous groups are suggested.<sup>130</sup> Conducting the consensus exercise with two homogenous groups allowed the views of both groups to be identified but did necessitate selecting a pre-defined method to combine their views. Given that patient group had generally lower levels of agreement on the inclusion of tasks, it may have been appropriate to set the bar at differing levels for the two groups, and this might be an approach which could be adopted in further similar consensus studies using two groups.

The response in the GP group was low, but this was in line with responses in other studies with GPs as participants<sup>146</sup> and still resulted in 15 GPs completing the consensus exercise, a number which has been shown to be sufficient for such exercises.<sup>130</sup> The anticipated response used in the sample size calculation assumed the same response to both rounds, but in this study the responses differed. There was a lower than anticipated response to round 1 but a much higher response to round 2, suggesting that once participants are engaged in a consensus exercise they will remain engaged for at least one subsequent round. The participating GPs may not have the same views as GPs as a whole, as they all declared a special interest in musculoskeletal disorders, but it does seem reasonable to use the views of “specialist” GPs when evidence suggests that GPs in general have not fully engaged with the management of OA.

The tasks which the consensus groups prioritised produced a framework for consultation that had a bio-medical focus and was not fully patient-centred, “eliciting patient expectations” for example was not included, and obtaining this result could be seen as a weakness of a methodology to develop a patient-centred consultation. However, the patient group could

have, but did not, prioritise “patient expectations”, suggesting that for this group such an aspect of the consultation was not an essential feature of patient centredness, and the aim was to elicit consensus around current views of patients and professionals on consulting for OA as an important starting point when planning how to implement change.

### **3.6 Conclusion and link to next chapter**

This chapter has reported on a consensus exercise to determine the content of a model OA consultation. The consensus of a group of GPs and patients was that the model OA consultation should include 25 tasks for the assessment and initial management of an older person presenting with peripheral joint pain. The next step was to plan its implementation: its delivery by GPs in day to day practice. This would require a change in clinical practice by those GPs and the next chapter reports on the development of a behaviour change intervention to implement the model OA consultation using the framework selected in chapter 2.



## **4 DEVELOPMENT OF A BEHAVIOUR CHANGE INTERVENTION**

### **4.1 Objective**

Utilise theory to develop a behaviour change intervention to implement the model OA consultation

### **4.2 Introduction**

The focus for implementation in this thesis is the delivery of the model OA consultation by GPs in day-to-day practice. This chapter presents the development of a behaviour change intervention designed to change the clinical practice of GPs when consulted by an older patient with joint pain, using the implementation framework described in chapter 2.

### **4.3 Background**

To recap, the implementation framework incorporated the use of three theoretical models:

- i) the Implementation of Change Model <sup>80</sup> to guide the overall process of implementation,
- ii) the Theoretical Domains Framework <sup>105</sup> to identify relevant determinants of change and
- iii) a model for mapping behaviour change techniques to identified determinants. <sup>119</sup>

The development of the behaviour change intervention was informed also by: a) adult learning theory <sup>147</sup> to inform the educational process of the behaviour change intervention, b) evidence from the Cochrane Effective Practice and Organisation of Care Group's reviews on effectiveness of behaviour change interventions, <sup>148</sup> c) specific communication skills training techniques. <sup>149, 150</sup> All models, evidence and techniques used in the development of the behaviour change intervention, and their order of use, are depicted in figure 4.1. The background and rationale for use is described in the next sections.

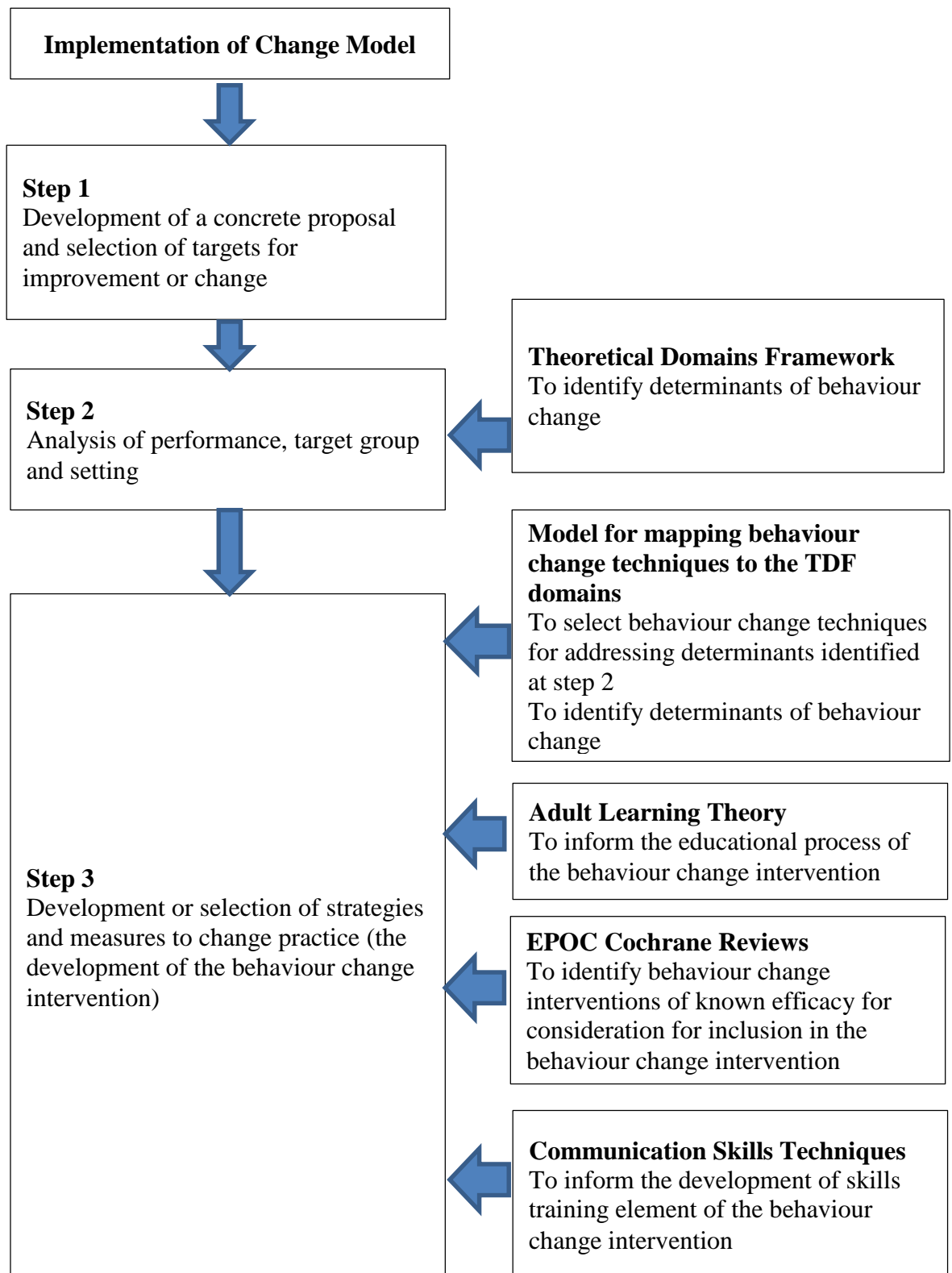


Figure 4.1 Models, evidence and techniques used in the development of the behaviour change intervention

### 4.3.1 The Implementation of Change Model

This model has been described in chapter 2 (section 2.5.1 page 66) and a summary of the model is shown in box 4.1. Steps 1, 2 and 3 were utilised in developing the behaviour change intervention. It was selected for use in the study as, in addition to its systematic approach, it provides guidance on the answers to three very practical questions relevant to planning change: “where do we want to be?” (step 1), “where are we now?” (step 2), and “how do we get there?” (step 3).

Step 1	Development of a concrete proposal and targets for change
Step 2	Analysis of performance, target group and setting
Step 3	Development or selection of strategies and measures to change practice
Step 4	Development, testing and execution of implementation plan
Step 5	Evaluate and, where necessary, adapt plan

Box 4.1 The Implementation of Change Model (with permission and adapted from *Improving Patient Care* 2005 <sup>80</sup>)

### 4.3.2 The Theoretical Domains Framework

The Theoretical Domains Framework (see chapter 2 section 2.5.2 page 70) was used to identify which factors, or “determinants”, might impede or facilitate the required behaviour change. In summary, it consists of 12 domains, 11 of which (box 4.2) cover various factors which have been proposed as determinants of behaviour change.

Theoretical Domain Framework domains	
Knowledge	Memory, attention and decision processes
Skills	Environmental context and resources
Social/professional role and identity	Social influences
Beliefs about capabilities	Emotion
Beliefs about consequences	Behavioural regulation
Motivation and goals	

Box 4.2 The Theoretical Domain Framework domains with permission and adapted from Michie et al 2005 <sup>105</sup>

The model was selected as the domains in the framework provided a practical and comprehensive list of the possible determinants of behaviour change.

### 4.3.3 Model for mapping behaviour change techniques to the Theoretical Domains Framework domains

The model <sup>119</sup> (see chapter 2 section 2.5.3 page 77) was developed to be used in conjunction with the Theoretical Domains Framework: to be used to aid selection of behaviour change techniques to address determinants identified using the Theoretical Domains Framework. It was selected for use as it provided a practical tool for selecting appropriate behaviour change techniques as the components of a behaviour change intervention.

### 4.3.4 Adult learning theory

Adult learning theory assumes that adults are internally motivated and self-directed, bring life experiences and knowledge to learning experiences, are goal and relevancy oriented, are practical and like to be respected. <sup>147</sup> Adult learning theory was selected to inform the educational process of the behaviour change intervention as it has a well-established role in

the development of courses to support continuing professional development,<sup>147</sup> including interventions such as the one developed in this study.

#### **4.3.5 Reviews by the Effective Practice and Organisation of Care (EPOC)**

##### **Group**

The EPOC Group is part of The Cochrane Collaboration<sup>v</sup> and focuses on reviews of interventions which are designed to improve professional practice and to date has undertaken approximately 70 reviews. The reviews fall into three broad categories: i) interventions aimed at individuals, for example continuing education, ii) interventions concerning organisational change, for example use of multidisciplinary teams and iii) financial interventions, for example concerning professional reimbursement. The first category contained three reviews conducted in three areas which were relevant to this thesis:

1. Educational meetings (including lectures, workshops and traineeships)
  - Continuing education meetings and workshops: effects on professional practice and health care outcomes<sup>91</sup>
2. Educational outreach visits
  - Educational outreach visits: effects on professional practice and health care outcomes<sup>101</sup>
3. Involvement of Local opinion leaders

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<sup>v</sup> The Cochrane Collaboration is a worldwide network founded about 20 years ago with the aim of producing systematic evidence about the effectiveness of healthcare - what works and what doesn't – and to date has published over 5 000 systematic reviews. The Effective Practice and Organisation of Care Group<sup>148</sup> is one of the 52 Cochrane Review Groups and has undertaken reviews of interventions which aimed to improve the delivery of care by health professionals.

- Effectiveness of the use of local opinion leaders to promote evidence-based practice and improving patient outcomes <sup>100</sup>

The review on educational meetings and workshops <sup>91</sup> concluded that meetings which had a mixture of interactive and didactic sessions were more effective than meetings which had either alone, and that educational meetings alone were unlikely to be effective for changing complex behaviours. In the second review <sup>101</sup> an educational outreach visit was defined as “a personal visit by a trained person to healthcare professionals in their own settings”. The authors concluded that educational outreach visits had small, but consistent, effects on prescribing by practitioners, but that the effect on performance in other areas was variable, ranging from small to modest improvements. The conclusion from the last review <sup>100</sup> was that opinion leaders, defined in the review as “... people who are seen as likeable, trustworthy and influential”, when used to disseminate evidence-based practice in interventions to improve professional practice and patient outcomes, resulted overall in a 12% absolute increase in compliance with the practice disseminated. It was decided that interventions with known efficacy should be considered in developing the behaviour change intervention for this thesis.

#### **4.3.6 Communication skills training techniques**

Communication skills training is principally offered to medical students, and other healthcare students, and practitioners in the early years of their careers. These groups are generally inexperienced, or relatively inexperienced, in using communication skills in medical consultations, and the agenda is to introduce them to the wide range of communication skills which have been developed, and train them in their use. Often the approach is to use guides to the consultation, such as the Calgary-Cambridge Guide, <sup>125</sup>

which present the students with a model of the consultation, depicting the flow of the consultation and listing the communication skills techniques which can be employed at the various stages of the consultation. In this way the communication skills are at the forefront of the training.

Communication skills training may also be provided as part of continuing professional development, such as when there is a desire to enhance consultations to improve patient outcomes. In this situation the people receiving the training are often experienced practitioners who have been practising for many years and are experts in their particular field. The approach to communication skills training outlined above for students and inexperienced practitioners, with communication skills at the forefront of the training, may well be seen as “teaching granny to suck eggs” by those who have undertaken many thousands of consultations and feel that they communicate well with patients. This style of training may not be well received by experienced practitioners and may be a barrier to their engagement in the training. However, an alternative style has been developed.

Rollnick and colleagues developed a new method of communication skills training which they termed “context-bound training” when developing a training programme for GPs with the aim of reducing the inappropriate use of antibiotics for patients with upper respiratory tract infections,<sup>150, 151</sup> and has been found to be effective in changing GP clinical practice.<sup>152-156</sup> Context-bound training was developed after first trying two traditional approaches with two groups of GPs:

1. With the first group, two half-day meetings in which the messages which needed to be given to patients, and some “difficult cases”, were discussed and a role play of the consultation attempted
2. With the second, a half-day workshop in which a series of case histories - brought to the workshop by the trainers - were discussed, the rationale for eliciting patient expectations and concerns of the illness and its treatment agreed, a role play with a simulated patient of “how not to do it” undertaken by one of the GPs, and finally “how to do things better” discussed

The GPs in the second group fed back that they felt that the role play was artificial, and did not like undertaking it in front of their colleagues, and that they were unlikely to change practice as a result of the workshop. The research team reflected on this feedback and their experience of running the training with the two groups before designing an alternative approach: a context-bound training approach.

This approach was delivered to a third group of GPs, the key changes were that: i) the role-play in the group was replaced by the GPs individually undertaking a consultation with a simulated patient in their own surgeries (pre-training consultation), ii) each GP saw the same “patient” who had the same scenario, iii) these simulated consultations were audiotaped and transcribed, iv) the GPs were given copies of the transcriptions to personally reflect on the simulated consultations, v) a training seminar was held within a day or so of the consultations for the GPs and trainers to discuss if, and how, the objective of the consultation had been achieved, and agree learning needs and how to enhance the consultation, and vi) the GPs were then re-consulted by the simulated patients in their own



surgery within a week of the seminar for the GPs to try out new approaches discussed in the training seminar (post-training consultation).

This process was repeated three times with the GPs being consulted by simulated patients before and after each of three training seminars. On each iteration the scenario for the simulated patient was agreed with the GPs prior to the first consultation, with more complex and challenging scenarios being agreed for the subsequent iterations.

The aim of this approach to the training was that: i) the GP and not the trainer is the expert, the trainer being the facilitator, ii) the starting point for the training is what GPs do in their day-to-day practice, iii) the training is undertaken in the GPs' world – at the practice, iv) the GPs decide on the simulated patient scenario, and v) everyday practice is in the foreground with communication skills in the background.

Simulated patients have also been extensively used in group settings when training consultation skills to medical students and GPs.<sup>149, 157</sup> One technique which has been developed for their use in this setting is that of “bite-sized” consulting in which members of the group being trained take it in turns to try out small parts of the consultation, and approach the rehearsal of consultation skills as a group exercise, with participants handing over to each other to try another “bite-sized” consultation. Techniques have been developed for such sessions so that the consultation can be “paused” or “rewound”, or to allow the simulated patient to give feedback in role or out of role. The consultation can be “paused” to give feedback and permit discussion, during which the simulated patient takes no active part, and then “rewound” so that another group member can go back in the consultation and try out another approach. During such sessions the simulated patient can

be asked, as the “patient”, to give feedback on a particular approach tried out by a member of the group, or at the end of the session can come out of role and be asked to give feedback as themselves. These techniques have been extensively used at Keele University for medical student training and in the local Vocational Training Course for GP training and one member (VC) of the team which would deliver the skills training for the MOSAICS trial was expert in these techniques.

The techniques of “context-bound training” and “bite-sized” consulting were considered appropriate for use in the skills training element of the behaviour change intervention as “context-bound training” had been used with success for a similar purpose and there was local expertise in “bite-sized” consulting.

## **4.4 Methods**

### **4.4.1 Step 1 – Development of a concrete proposal for change**

The starting point for step 1 was the consensus model OA consultation whose development was reported in chapter 3. The consensus model OA consultation consisted of 25 tasks covering assessment and treatment of an older patient presenting with peripheral joint pain (chapter 3 table 3.5 page 110). To develop the “concrete proposal” the characteristics of the consensus model OA consultation were compared with characteristics known to promote or hinder the implementation of an innovation <sup>80</sup> (see chapter 2 section 2.5.1.1, page 68) and this was used to refine the model OA consultation to enhance its potential for uptake.

To develop the concrete proposal three general practice advisory groups were formed – two consisting of GPs with research or teaching roles at Keele University and one

consisting of members of the primary healthcare team in a local general practice which was a member of Central England Primary Care Research Network.<sup>w</sup> Meetings were arranged, audiotaped and “real-time” field notes kept by the facilitators.

The consensus model OA consultation, with eight additional tasks,<sup>x</sup> was presented to the groups and their views and understanding of the model obtained (see appendices 4.1 and 4.2 (pages 349 and 351) for details of topic guide and Power Point presentation used at the meetings). The feedback from the advisory groups was used to inform which aspects of the model consultation needed to be refined to enhance its uptake by GPs.

#### **4.4.2 Step 2 – Analysis of performance, target group and setting**

Members of the three advisory groups described above, at the same meetings as arranged for step 1, were asked about: i) their current management of OA, ii) their awareness of, and agreement with, the NICE OA Guideline and its recommendations on treatment, and iii) any gaps which they perceived between their current practice and that recommended by NICE and in the model OA consultation. In addition, they were asked to suggest which barriers and/or facilitators might be relevant to implementing the model OA consultation in practice (see appendices 4.1 and 4.2 (pages 349 and 351) for details of topic guide and Power Point presentation used at the meetings). Their responses on barriers and facilitators were mapped to the domains in the Theoretical Domains Framework.

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<sup>w</sup> The Central England Primary Care Research Network (PCRN) was one of the eight local PCRN in the English National Institute for Health Research and is now superseded by the Clinical Research Network: West Midlands. The role of the PCRN was to support the delivery in primary care for studies approved for delivery in the English National Health Service.

<sup>x</sup> At the time of the advisory group meetings only a preliminary analysis of the consensus exercise had been performed and all tasks which had a level of agreement for inclusion of 80% or greater were presented to the groups, and not just those in the model OA consultation (those with a level of agreement of 90% or greater). In addition three tasks were included with a level of agreement less than 80% (asking about expectations of the consultation, explaining the risks of painkillers and formulating a self-management plan) as these were felt to be necessary for, respectively, a patient centred, safe and logical consultation.

#### **4.4.3 Step 3 – Development or selection of strategies and measures to change practice (development of the behaviour change intervention)**

Step 3 was undertaken in four phases:

1. The content was developed by the study team informed by the views of GPs from step 2.
2. The behaviour change techniques were selected by applying the model for mapping behaviour change techniques to the TDF to the domains identified in step 2.
3. Adult learning theory, the Cochrane EPOC Group's systematic reviews, and the two consultation skills training techniques described in section 4.3.1 were used to decide on overall mode of delivery and the approach to be taken for the skills training.
4. Practical issues, such as venues, timings and duration of meetings, how best to deliver the behaviour change intervention workshops, and what was feasible in the MOSAICS study, were addressed by the study team in consultation with the general practices in the study.

### **4.5 Results**

#### **4.5.1 Step 1 – Development of a concrete proposal for change**

The advisory group meetings were led by myself and attended by 15 GPs, five practice nurses, an audit clerk and a practice manager. The first meeting took place on 17<sup>th</sup> December 2009 and was attended by five GPs, all of whom had a current academic appointment in the Research Institute for Primary Care and Health Sciences at Keele University. The second meeting took place on 8<sup>th</sup> February 2010 at the Moorlands Medical Centre in Leek, Staffordshire and was attended by four GPs, five practice nurses, one audit clerk and the practice manager, all of whom worked in the practice. The third meeting took place on 10<sup>th</sup> February 2010 and was attended by six GPs, all of whom had a current

academic appointment in the Medical School at Keele University. In addition to myself other members of the MOSAICS Study were present at some or all of the meetings (KD (the Chief Investigator of the study), CM (pain psychologist advising on the development of the behaviour change intervention), JH (study co-ordinator and note taker for the meetings), and ZP (academic rheumatologist undertaking a PhD on GPs' OA consultations).

The key finding from the meetings concerning the characteristics of the model OA consultation was that, presented as a long list of tasks, it was too complex to explain simply and quickly to GPs or for them to easily understand and translate into day-to-day practice.

#### **4.5.1.1 Simplification of the model OA consultation**

To simplify, it was decided that the model OA consultation should be presented not as a large number of individual tasks but under a restricted number of headings, with the tasks grouped by these headings. The first step was choose the headings.

##### *Choosing the headings*

The Calgary Cambridge Framework,<sup>125</sup> was used to identify potential headings, those of: gathering information, physical examination, information giving, management plan, closing and recording the consultation.

Additional headings were identified from two papers on patient-centred consulting, which was a key focus of the model OA consultation.<sup>121, 158</sup> First, Wagner and colleagues<sup>158</sup> developed a “model for improvement of chronic illness care” which is widely cited in the

literature in relation to best practice for the management of chronic conditions such as OA. They proposed five key features of healthcare systems which improve outcomes for patients with chronic conditions (box 4.3).

- Have well-developed processes and incentives for making changes in the care delivery system
- Assure behaviourally sophisticated self-management support that gives priority to increasing patients' confidence and skills so that they can be the ultimate manager of their illness
- Reorganize team function and practice systems (e.g., appointments and follow-up) to meet the needs of chronically ill patients
- Develop and implement evidence-based guidelines and support those guidelines through provider education, reminders, and increased interaction between generalists and specialists
- Enhance information systems to facilitate the development of disease registries, tracking systems, and reminders and to give feedback on performance

Box 4.3 Key features of healthcare systems when providing care for chronic conditions (adapted with permission) <sup>158</sup>

Two of these features relate to the delivery of care in consultations and therefore could be considered as headings for labelling the tasks: self-management support and the use of evidence-based guidelines.

Second, Kennedy and colleagues <sup>121</sup> in an article on the care of people with chronic disease, describing the whole system informing self-management engagement (WISE) model, proposed that support for self-management should be provided when patients consult and that professionals should be trained in patient-centred consulting in order “to manage the effect of the condition on the patient and establish a collaborative approach to decision making”. The activities of self-management support, patient-centred consulting and shared decision making could be considered as candidates for headings.

The conclusion from reviewing these papers was that the most helpful concepts to add to the potential headings from the Calgary Cambridge Framework were; support for self-management and the use of evidence-based guidelines. The five final headings chosen were: i) assessment (information gathering and physical examination combined), ii) giving the diagnosis, iii) GP management, iv) evidence-based practice and v) self-management support.

### *Grouping the tasks*

First the tasks were labelled with one or more of the headings (appendix 4.3 page 352). Having undertaken this exercise the headings were refined in light of undertaking this exercise to better represent a group of tasks:

1. Assessing and diagnosing the problem
2. Explaining OA and its treatment
3. Managing OA
4. Supporting self-management
5. Recording the consultation

Each task was then allocated to one of these headings (appendix 4.4 page 355).

### *Final simplification of model OA consultation*

The final stage was to find a style and format to present these five headings in as succinct and meaningful a way as possible. The following refinements were made to the headings:

- The first two headings (bar explaining OA treatment) were combined to give “making, giving and explaining the diagnosis”;
- The third heading “managing OA” was altered to “providing analgesia advice / prescription” to express the high priority given to pain related tasks in the consensus exercise
- The fourth heading “supporting self-management” was combined with “explaining OA treatment” (see above) to give “promoting and supporting self-management”. The rationale being that all the tasks related to aspects of OA self-management, notably exercise and weight loss

This enabled the model to be presented as three key tasks (box 4.4).

- |  |
|--|
| <ol style="list-style-type: none"> <li>1. To make, give and explain the diagnosis</li> <li>2. To provide analgesia advice / prescription</li> <li>3. To promote and support self-management</li> </ol> |
|--|

Box 4.4 Key Tasks of the Model OA Consultation

#### **4.5.2 Step 2 – Analysis of performance, target group and setting**

The advisory group meeting transcripts and field notes on current practice, attitudes to recommended best practice, and perceived barriers to, and incentives for, changing practice, were analysed using the Theoretical Domains Framework as a coding framework (appendix 4.5 page 356). The analysis was presented to the study team, and a group of



expert educational advisors to the study, <sup>y</sup> and discussed. Seven Theoretical Domains Framework domains were identified as relevant to changing GP practice in OA consultations (table 4.1).

<b>TDF domain</b>	<b>Aspects of domain identified in target group analysis</b>
Knowledge	The epidemiology and impact of OA, the recommendations of the NICE OA Guideline, the rationale for GPs providing support for the self-management of OA and that of making the diagnosis of OA clinically, details of the MOSAIC study procedures
Skills	The skills needed to make the diagnosis of OA clinically, and those for delivering the model OA consultation
Social / professional role and identity	The credibility of NICE guidance in general and specifically of NICE OA guidance, and the GP's role in providing support for self-management
Beliefs about capabilities	The time to deliver the model OA consultation in day-to-day practice, and any previous difficulties in managing OA
Beliefs about consequences	The GPs' doubts about the efficacy of OA interventions recommended by NICE OA guidance
Motivation and goals	That OA and its management was not considered a high priority by the GPs, compared with other areas of general practice
Memory, attention and decision processes	The GPs remembering to undertake the model OA consultation in day-to-day practice, when an older adult presents with peripheral joint pain

Table 4.1 Determinants for implementing the model OA consultation ordered by Theoretical Domains Framework (TDF) domain

<sup>y</sup> The group consisted of a professor of general practice, a professor of medical education, and an academic rheumatologist with an interest in medical education.

### **4.5.3 Step 3 – Development or selection of strategies and measures to change practice**

#### **4.5.3.1 Content**

The content of the behaviour change intervention was derived by the study team, beginning with the practical requirements of delivering the model OA consultation and then addressing potential knowledge gaps identified in the advisory group meetings, such as the recommendations in the NICE OA Guideline, the impact of OA on the individual, and the skills necessary to deliver the model OA consultation (table 4.2, second column).

<b>TDF domain</b>	<b>Behaviour change intervention content</b>	<b>Techniques for behaviour change chosen to address domain</b>
Knowledge	Burden / prognosis / pathophysiology of OA, experience of patients with OA of general practice NICE OA guidance, efficacy OA treatments Rationale for making the diagnosis of OA clinically and for giving the diagnosis Rationale for self-care of OA, support for self-care and patient centre consulting OA Guidebook and the model OA consultation	Information provision to address gaps in knowledge about: <ul style="list-style-type: none"> <li>• The nature and management of OA</li> <li>• NICE OA recommendations</li> <li>• The model OA consultation</li> </ul>
Skills	Assessing ideas / concerns and expectations / treatment preferences Making a clinical diagnosis of OA Giving the diagnosis / explaining OA and its treatment (use of language) Use of NICE recommended treatments Promoting OA Guidebook and nurse follow-up appointment	Rehearsal of relevant skills; graded task starting with easy tasks; increasing skills: problem-solving to: <ul style="list-style-type: none"> <li>• Enhance GP consultation skills for OA</li> </ul>
Social/professional role and identity	Attitudes to guidelines and NICE OA guidance Attitudes to support for self-care (potential conflict between professional care and self-care)	Social process of encouragement, pressure and support to: <ul style="list-style-type: none"> <li>• Engender a positive approach to guideline implementation and support for self-care</li> </ul>
Beliefs about capabilities	Time to do it Other priorities in consultation Discussion about problems with managing OA / what would help to better manage it	Social processes of encouragement, pressure and support to: <ul style="list-style-type: none"> <li>• Enhance perceived ability to deliver the model OA consultation</li> </ul>
Beliefs about consequences	Discussion on beliefs about consequences of OA interventions and model OA consultation	Information provision; persuasive communication to: <ul style="list-style-type: none"> <li>• Counter perceived lack of efficacy of interventions for OA</li> </ul>
Motivation and goals	Presentation of MOSAIC study payments Provision of practice nurse training and a lifestyle change intervention	Contract; rewards; persuasive communication to: <ul style="list-style-type: none"> <li>• Sign GPs up to delivering the model OA consultation</li> </ul>
Memory attention and decision processes	Model OA Consultation Aide Memoire	Prompts, triggers, cues to: <ul style="list-style-type: none"> <li>• Prompt delivery if model OA consultation in day-to-day practice</li> </ul>

Table 4.2 Content of behaviour change intervention and behaviour change techniques by relevant domains of the Theoretical Domains Framework (TDF)

The specific content of the skills training sessions comprised rehearsal of delivery of the key tasks of the model consultation and of a consultation technique from Motivational Interviewing - the “elicit/provide/elicit” technique.<sup>159</sup> This technique was included as it provided a technique for operationalising a patient-centred aspect of the model OA consultation: that of asking about ideas and concerns, and checking understanding. In Motivational Interviewing, its use is recommended when giving advice: eliciting patient’s prior knowledge before providing advice tailored to prior knowledge, and then eliciting understanding of advice given.<sup>159</sup> Its use in the skills training sessions for GPs was focused principally on the two initial tasks: the third task - eliciting understanding - was to be principally undertaken by the nurse in the OA clinic.

#### **4.5.3.2 Behaviour change techniques**

The selection of behaviour change techniques was undertaken by the study team and the educational advisors to the study. The starting point was the list of techniques which Michie et al<sup>119</sup> had judged appropriate to effect change in the domains identified in step 2. The study team and educational advisors used their research, clinical and educational experience to select behaviour change techniques appropriate for addressing the determinants. A consensus was reached that six techniques were needed to achieve this (table 4.2, column 3):

1. Information provision to address gaps in knowledge about:
  - a. The nature and management of OA
  - b. NICE OA recommendations
  - c. The model OA consultation
  - d. The efficacy of interventions for OA

2. Rehearsal of relevant skills; graded task starting with easy tasks; increasing skills: problem-solving to enhance GP consultation skills for OA (delivery of the model OA consultation)
3. Social process of encouragement, pressure and support to:
  - a. Engender a positive approach to guideline implementation and support for self-care
  - b. Enhance perceived ability to deliver the model OA consultation
4. Persuasive communication to counter perceived lack of efficacy of interventions for OA
5. Contract; rewards; persuasive communication to sign GPs up to delivering the model OA consultation
6. Prompts, triggers, cues to prompt delivery of model OA consultation in day-to-day practice

#### **4.5.3.3 Mode of delivery**

##### *EPOC reviews evidence*

The decision on which modes of delivery to adopt was informed by the evidence from the Cochrane Effective Practice and Organisation of Care Group (described above) on the effectiveness of strategies for changing practice, so that:

- The behaviour change intervention would be delivered in educational meetings, or workshops, with a mixture of didactic and interactive sessions
- Workshops would be delivered as out-reach visits to the GPs
- Workshop delivery would be led by an opinion leader: a local experienced GP with a research interest in OA and the Clinical Champion for OA for the UK Royal College of General Practitioners

### *Adult learning theory*

The use of a learner-centred approach to effect change in behaviour described above enabled both clarification of the content of the workshops and also identification of the specific tasks and the manner in which the GPs would be engaged:

- The workshops would be delivered with the understanding that the GPs would be experienced practitioners, and would have experience, knowhow and views on the management of OA in general practice, and that it would be important to allow them to share this knowledge and experience in the workshops
- The practice as a whole and the individual GPs would respectively be: prompted to discuss how they manage OA currently and asked to bring, present and discuss case histories of recent patients with OA
- The GPs would be asked what information would help them to better manage OA, and that these needs would be addressed in a subsequent workshop
- The agenda for the skills training sessions would be set by the GPs: the skills to be practised during the session
- It would be important that the facilitators would be viewed by the GPs as partners – that both facilitators and GPs had relevant knowledge and experience – although with regards to evidence-based practice for OA and musculoskeletal pain, the facilitators would be viewed as opinion leaders

### *Skills training techniques*

The delivery of the skills sessions was based on the “context-bound training” and the “bite-sized” consulting techniques, so that:

- The GPs would be consulted by simulated patients in their own practices before, between and after the workshop, and would be provided with a DVD of these consultations. This would enable the consultation to be rehearsed in as close to day-to-day practice as possible and in the GPs' "world", and allow reflection of these consultations to be undertaken during the workshops
- The task for these consultations would be the assessment and management of the problem presented by the simulated patient – a history of increasingly troublesome knee or hip pain – so that the management of OA would be in the foreground and not the communication skills
- The "bite-sized" consulting model of using simulated patients in small group training would be followed, with the group working together to practice the model OA consultation with the simulated patient, and with individuals only undertaking "bite-sized" portions of the consultation at a time

#### **4.5.3.4 Practical considerations**

The final step in specifying the intervention was to take into account the practicalities of delivering the intervention given the myriad demands on the GPs' and other practice staff's time. The final format, developed by the study team and educational advisors, was to:

- Deliver the workshops at the general practices' premises, or at a nearby practice, to make it easier for GPs to attend during their working day
- Keep the workshops to no longer than two hours, so that they could be accommodated in the GPs' working day

The programme for the behaviour change intervention workshops with detailed timings is shown in appendix 4.6 (page 357). In brief it consisted of four workshops: the first gave the practice team the opportunity to discuss how OA was currently managed in their practice and included a knowledge-based “OA Update”; the second included group reflection on the consultations previously undertaken with the simulated patients at the practice followed by a skills training session; the third included another skills training session and a question and an answer session with a rheumatologist; the fourth was an action planning session prior to the practice starting to deliver the trial intervention.

## **4.6 Discussion**

### **4.6.1 Principal findings**

The utilisation of the Implementation of Change Model, the Theoretical Domains Framework and the model for mapping behaviour change techniques to the Theoretical Domains Framework domains, enabled a systematic and theory driven approach to be taken to the development of an intervention to change clinical practice for the management of OA by GPs. This proved to be a practical way of using implementation theory to inform, rather than just inspire, the development of a complex behaviour change intervention, an approach which is widely advocated but reportedly not always taken.<sup>160-162</sup>

The Implementation of Change Model provided a framework to answer three core questions - “where do we want to be?”, “where are we now?”, and “how do we get there?” – a task which is recommended in the Medical Research Council (MRC) guidance on the development of complex interventions: that researchers can fully describe the trial intervention and that they can implement it in the research setting.<sup>163</sup> The behaviour change intervention in this thesis addressed the latter point: implementation of a trial



intervention, specifically the GP component of the MOSAICS trial intervention. The use of the Theoretical Domains Framework at step 2, and the behaviour change technique mapping at step 3 enabled systematic identification of relevant determinants of change and behaviour change techniques to address them, for example information giving to address gaps in knowledge about OA, and rehearsal and feedback to enhance consultation skills. In principle such a systematic approach aids inquiry into the process of implementing an intervention: was a determinant adequately addressed and did change in the determinant occur? For example in this thesis, did the skills training sessions encompass the necessary skills to undertake the model OA consultation and did the GPs become more skilful in undertaking it?

In addition to theory, empirical evidence, previously developed techniques for communication skills training and practical considerations were used in deciding the mode of delivery to ensure that the end product was evidence-based, feasible to deliver and acceptable to the recipients.

By taking the approach outlined above, an end product – a detailed programme for four workshops (appendix 4.6 page 357) – was systematically developed to implement a “concrete” representation of the model OA consultation. It included content and techniques to address barriers to implementation, utilised relevant empirical evidence and addressed practical considerations. Although such a systematic development may not ensure its success in implementing the model OA consultation, it has resulted in a detailed understanding of why the programme was so constructed, how it was designed to work and what it aimed to achieve.

#### **4.6.2 Comparison with the literature on developing behaviour change interventions**

The behaviour change intervention developed for this thesis can be described as a tailored intervention, one that was developed “taking account of prospectively identified barriers to change”.<sup>164</sup> A Cochrane systematic review concluded that such interventions improved professional practice, compared with no intervention or dissemination of guidelines, but that there was a lack of evidence that they were more effective than “untailored interventions”, as such studies had not been undertaken.<sup>164</sup> The review found that there was a wide variety of methods used to identify barriers, suggesting that a settled opinion on best methods to use had not been reached, and that further methodological research be undertaken.<sup>164</sup> Methods to identify barriers include brainstorming sessions, focus groups, one to one interviews and surveys,<sup>164-166</sup> and many frameworks or models for identifying barriers have been developed.<sup>165</sup> A systematic review of such frameworks identified 12 in the literature which were deemed to be of high quality when judged against nine parameters (comprehensiveness, relevance, applicability, simplicity, logic, clarity, usability, suitability, and usefulness), one of which being the Theoretical Domains Framework.<sup>165</sup>

In this thesis the Theoretical Domains Framework was used to code data collected in health professional focus groups. The Theoretical Domains Framework and behaviour change technique mapping, developed by Michie et al., have both been published within the last 10 years and a number of studies have reported on utility and outcome in the development of behaviour change interventions for trials.<sup>118, 167, 168</sup> Both models, used sequentially as in this study, have been employed in the development of interventions to improve the management of low back pain,<sup>118</sup> to enhance GP diagnosis of dementia<sup>167</sup> and reduce

antibiotic use for upper respiratory infections.<sup>168</sup> Two of these have resulted in multifaceted interventions as developed in this study,<sup>118, 167</sup> with the other<sup>168</sup> resulting in two interventions, each specifically addressing one of two determinants of behaviour change identified. The low back pain study, having determined the behaviour change techniques to include in the behaviour change intervention, took a pragmatic approach to the mode of delivery: what was locally feasible and acceptable. This was the approach to delivery taken in the present study, but in addition the final format of the behaviour change intervention was guided by evidence of effectiveness of different modes of delivery in the Cochrane EPOC database.<sup>148</sup> To date only the low back pain trial has reported, and it showed a small effect in GP intention to practice but no significant change in actual behaviour.<sup>169</sup> That clinical practice was not observed to change may not have been due to the intervention per se: there were logistical problems in getting GPs to attend the intervention workshops (only 61% of GPs in the intervention arm attended the workshops) and methodological problems in assessing outcome (not enough patients could be recruited to provide data on clinical practice for individual patients attending with non-specific back pain). The drive to use theory to inform the development of interventions has been questioned,<sup>112</sup> as empirical evidence is lacking on the effectiveness of interventions developed in this way. Although the low back pain trial did not demonstrate a change in clinical practice, its use of theory does add to empirical evidence on the process of behaviour change.

#### **4.6.3 Strengths and possible limitations in development of the intervention**

Developing complex interventions is a complex task in itself and understanding how to approach it in a systematic way, informed by relevant theory, can be daunting for research teams.<sup>163</sup> The principal strength of the method described in this chapter is that it enabled the Medical Research Council guidance on developing complex interventions to be

operationalized systematically, and in a practical and do-able manner. The guidance on using the Implementation of Change model to change clinical behaviour is extensive <sup>80</sup> and provided a very usable manual on “how to do it”. The use of the TDF strengthens the approach advocated for the Implementation of Change Model for step 2, and is reflected in the increasing popularity of the Theoretical Domains Framework with research teams in developing interventions <sup>117</sup>. In addition, the recent validation and refining of the Theoretical Domains Framework domains has strengthened the rationale for its methodology, as used in this study, and, with a refined structure, strengthened its use in future studies. <sup>170</sup>

The use of the GP advisory group meetings both to gain views about the proposed change (step 1) and to undertake the target group analysis (step 2) was a practical strength. It provided an efficient method of: i) involving the target group in the development of the change proposal (an activity in its own right which enhances uptake of an intervention <sup>80</sup>), ii) identifying which characteristics of the intervention might hinder or facilitate uptake, and iii) understanding current practice and identifying relevant determinants of change.

Two potential limitations of the intervention development have to be acknowledged. First, the topic guide had been developed, and the meetings undertaken, before deciding to use the Theoretical Domains Framework in step 2. That the topic guide for the advisory group meetings was not specifically developed from the Theoretical Domains Framework opens up the possibility that some of the Theoretical Domains Framework domains were not fully explored in the meetings. However, the topic guide was broad and covered current management, views about recommended practice and perceived gaps between current and recommended care, and allowed for free discussion by the groups. This has occurred in other

studies<sup>116, 171</sup> and, although not used to develop the topic guide, the Theoretical Domains Framework did give an efficient method for analysing the advisory group comments.

Second, the GPs who attended the advisory group meetings were not the same GPs who were to receive the behaviour change intervention in the MOSAICS study, and their views and attitudes may not have been the same as these GPs. Analysis of the actual target group for the behaviour change intervention – the GPs in the four MOSAICS intervention practices – may have identified different determinants to be addressed but the logistics of delivering the behaviour change intervention in the MOSAICS study did not allow for this. However, as the mode of delivery included interactive sessions, and the sessions encouraged reflection on current practice and on the video-recorded consultations, there was ample opportunity for issues specific to the study GPs to be addressed.

## **4.7 Conclusion and link to next chapters**

A stepped approach to the development of a behaviour change intervention, with the utilisation of models to identify determinants of change and match behaviour change techniques to these, resulted in the development of a detailed programme for four behaviour change intervention workshops which covered: content, behaviour change techniques, mode of delivery and practical considerations.

The selection and development of methods and measures to evaluate the impact of the behaviour change intervention on GP delivery of the model OA consultation will be described in chapters 5 and 6.

## **5 METHODS AND MEASURES TO EVALUATE IMPACT OF THE BEHAVIOUR CHANGE INTERVENTION**

### **5.1 Objective**

To select and develop methods and measures to evaluate the impact of the behaviour change intervention, and to describe their use and analysis in this thesis

### **5.2 Introduction**

In chapter 1 the need for a change in clinical practice of GPs in the management of OA was identified, and it was stated that for this thesis the change would be delivery of a model OA consultation to enhance the management of OA in line with NICE OA guidance. In chapters 3 and 4 the content of a model OA consultation was developed, a behaviour change intervention designed to change clinical practice, and the content of four workshops to deliver the behaviour change intervention defined. The present chapter reports on the methods and the measures adopted to evaluate the impact of the behaviour change intervention workshops (henceforth for brevity referred to as the workshops), and describes their use and analysis.

The principal considerations were

1. Which workshop impacts to measure
2. Which research design to use
3. Which methods and measures to adopt to assess change in impacts

The first and second considerations are discussed in the remainder of this introduction, the details of methods and measures adopted for this thesis are described in the methods section of this chapter.

### **5.2.1 Which impacts to measure?**

An attractive option was to measure the impact on the patient. Workshops, such as the one in this study, which have the aim of training clinicians to deliver a new treatment, are often evaluated by their impact at the level of the patient who receives the treatment and not at the level of the clinician who delivers it.<sup>111</sup> In the present study, this would be patients who received the model OA consultation and not the GPs delivering it. The rationale for this approach would be that the model OA consultation was designed as part of a trial intervention to implement the recommendations of the NICE 2008 OA Guideline. These recommendations include treatments with proven effectiveness in the management of people with OA, and delivery of the model OA consultation should result in better outcomes for patients with OA. Further, comparison of patient outcomes between the two arms of the MOSAICS trial could then be utilised to evaluate workshop impact.

However, impact on the patient would not be an immediate or direct impact of the workshops. The nature of the GP delivery of the model OA consultation was only one of a number of possible factors which could have influenced patient outcomes; others included attending the nurse-led OA clinic, efficacy of treatments and treatment compliance. The primary focus in this thesis was on how to enhance the clinical practice of GPs in the management OA, and not, though equally important, how to improve outcomes for patients with OA. Given this focus and the considerations described above, it was not the impact at

the level of the patient which was most relevant for this thesis but the impact of the workshops at the level of the GP.

At the GP level there was a choice of impacts which could be measured. The logical first choice, when evaluating workshops delivering a behaviour change intervention, was GP behaviour, in this instance the behaviour being clinical practice for the management of OA. Other choices were suggested by a framework developed by Kirkpatrick for evaluation of educational activities such as the workshops in this thesis.<sup>172, 173</sup> The framework contains four levels of outcome: 1) learners' reactions regarding participation, 2) modification of attitudes, and acquisition of knowledge and skills, 3) changes in behaviour and 4) changes in organisational practice and/or benefit to patients (box 5.1).

**Kirkpatrick Hierarchy adapted for use in the evaluation of medical education**

Level 1 Participation, which covers learners' views on, and reactions to, the learning experience, its organisation, presentation, content, teaching methods

Level 2a Modification of attitudes/perceptions towards the intervention

Level 2b Modification of knowledge/ skills, such as the acquisition of concepts, principles and procedures, and of thinking/problem-solving and social skills

Level 3 Behaviour change, which covers the transfer of the learning to the workplace or willingness of learners to apply new skills and knowledge

Level 4a Change in organisational practice, such as the wider changes in the organisation and delivery of care

Level 4b Benefits to patients such as any improvement in health and well-being of patients as a direct result of an educational programme

Box 5.1 Kirkpatrick's framework for the evaluation of educational activities adapted from Yardley et al (with permission)<sup>173</sup>



These levels, bar levels 4a and b (respectively: beyond the scope of this thesis and, as stated above, not considered a relevant impact), provided a framework for considering the choice of impacts and are addressed below in descending order: level 3 (behaviour / GP clinical practice), level 2a&b (knowledge / skills / attitudes), and level 1 (learner reactions).

#### **5.2.1.1 Level 3: impact on GP clinical practice**

Clinical practice in this thesis was defined as GP delivery of the model OA consultation. Its delivery could be measured at two levels: the immediate effect of the workshops on the GPs who attended them and the overall effect on clinical practice in the active arm practices.

##### *Clinical practice of GPs who attended the workshops*

The immediate aim of the workshops was to effect delivery of the model OA consultation – to enhance management of OA in line with the recommendations of the NICE 2008 OA Guideline - by GPs who attended the workshops. Such change would arguably be the most immediate impact of the workshops and therefore an obvious way to measure their effect.

##### *Clinical practice in the active arm practices of the MOSAICS trial*

The overall aim of the workshops however was to implement delivery of the model OA consultation in day-to-day clinical practice at the level of the GP practice, specifically its delivery as a component of the trial intervention in the four practices in the active arm of the MOSAICS trial. The trial protocol stated that the model OA consultation would be delivered by GPs in the active arm to all older patients presenting with peripheral joint pain during the conduct of the trial. Delivery at the level of the practice would be a relevant impact to measure, as only if it was implemented across the practice would all patients have the opportunity to benefit from the model OA consultation. However, practice level delivery

would be contingent on more than the direct impact of the workshops on clinical practice, for example it could be affected by turnover in staff if new GPs had not attended the workshops.

#### **5.2.1.2 Level 2: impact on uptake of NICE OA guidance**

Uptake of guidance requires, amongst other factors, that it be known and agreed with, and can be regarded as a level 2 outcome in the Kirkpatrick model, which is concerned with the modification of knowledge and attitudes. The model OA consultation and the workshops promoted the recommendations of the NICE 2008 OA Guideline, with a focus on four recommendations: that healthcare professionals should support people with OA to self-manage their condition, and three core recommendations to provide: relevant verbal and written advice, advice on exercises and physical activity, and, when appropriate, advice on interventions to lose weight. With this focus it was relevant to evaluate the impact of the workshops on the uptake of these recommendations by the GPs who attended them.

#### **5.2.1.3 Level 2: impact on determinants of change**

The determinants of change domains developed for the Theoretical Domains Framework by Michie et al <sup>105</sup> cover outcomes included at level 2 (attitudes) and can sensibly be considered at this level. The workshops were developed to address the determinants of change identified in the GP target group analysis (see chapter 4 table 4.1 page 133). Determinants relating to seven domains were identified: those concerning knowledge; skills; social / professional role and identity; beliefs about capabilities; beliefs about consequences; motivation and goals; memory, attention and decision processes. The logic of identifying and then addressing these determinants in the workshops was that the workshops aimed to effect a change in the status of the determinants, which in turn would then (it was hypothesised) effect a change in clinical

practice. For example, increased level of knowledge or more positive beliefs about consequences could each in part lead to a change in clinical practice. To explore the process by which clinical practice might be changed, measuring the impact of the workshops on these determinants would be helpful.

#### **5.2.1.4 Level 1: impact on GP participation in the workshops**

At level 1 learner reactions to the experience of participating in educational activities and views on the content of such activities are the subject of interest.<sup>173</sup> As for other educational activities, the effect of the workshops on level 1 outcomes is clearly one important measure of their impact. However, although self-report and feedback from learners is always desirable, it is not a measure of actual impact on clinical practice, or its determinants, and should be viewed as a secondary impact.

#### **5.2.2 Impacts chosen and research questions to be answered**

The impacts described in sections 5.2.1.1 to 5.2.1.4 were chosen for this thesis and five research questions were formulated, four at the level of the GP and one at the level of the practice:

GP LEVEL: Would the workshops, among GPs who attended the workshops,

1. Change their clinical practice?
2. Increase their uptake of recommendations in the NICE 2008 OA Guideline?
3. Change the status of determinants of change addressed by the workshops?
4. Produce positive “learner reactions”?

PRACTICE LEVEL: Would the workshops, in the four active arm practices, lead to

5. Implementing the delivery of the model OA consultation in day-to-day practice?

### **5.2.3 Which research design to measure change?**

In evaluating the impact of a new treatment or intervention, such as the benefit of a new drug or of delivery of a new healthcare service, the method with least risk of bias is a randomised controlled trial.<sup>174</sup> Bias is minimised by random allocation of participants or sites (in the case of a cluster randomised controlled trial) to active and control arms, applying the intervention to the active arm and comparing the outcome of interest between the two arms at a time-point after the intervention has taken place.<sup>70</sup> This design has been used to evaluate the benefit of a behaviour change intervention, with participants randomly selected to receive or not receive the intervention, and in the evaluation of implementation interventions.<sup>80</sup>

However, randomisation of participants to active or control arms is not always practical or ethically acceptable, and in these situations non-randomised, or quasi-experimental, designs need to be adopted. One such quasi-experimental design is a one-group pretest-posttest design.<sup>175</sup> In a study using this design there is no control arm and data are collected on participants, who are due to receive the intervention, before and after they have received the intervention.<sup>175</sup> In such a design paired data can be collected: paired observations on individuals before and after the intervention. This paired design enables within-subject differences to be used as the basis of analysis and removes the issue of between-subject variability.<sup>176</sup>

In the MOSAICS trial there was an opportunity to perform a before and after evaluation of the impact of the workshops on the GPs in the active arm practices, which was an approach taken in previous studies evaluating communication skills training for GPs, by Cals et al for the management of acute bronchitis <sup>152</sup> and by Rollnick et al for sore throat. <sup>151</sup> But there was not, for reasons of limited trial resources, the opportunity to undertake a comparison between GPs attending the workshops and those in the control arm not attending the workshops.

### **5.3 Methods**

This section reports on the background, and choice, of methods and measures to answer the five research questions posed above (summarised in table 5.1), and the practicalities of how they were used in this thesis. This is followed by a description of the plan of analysis and a description of work undertaken to develop the measures.

Research question	Method	Measure
<b>GP LEVEL</b>		
1. Change in clinical practice	Before-and-after video-recorded GP consultations with simulated patients	Quantitative assessment of delivery of model OA consultation tasks
	Before-and-after postal survey	Vignette questionnaire adapted for use in this study
2. Increased uptake of NICE OA recommendations	Before-and-after postal survey	Questionnaire adapted for use in this study
3. Change in status of determinants of change	Before-and-after postal survey	Questionnaire developed for use in this study
4. Learner reactions	End of workshops survey	Questionnaire adapted for use in this study
<b>PRACTICE LEVEL</b>		
5. Implementation of model OA consultation	Audit of delivery of model OA consultation	Nurse administered questionnaire to capture patient report of delivery of model OA consultation

Table 5.1 Summary of methods and measures to evaluate workshop impact

### 5.3.1 Methods and measures for question 1: change in clinical practice

In evaluating impact on clinical practice, direct measurement of practice, such as direct observation, is recommended wherever possible, but it is sometimes necessary to use indirect methods, such as medical record review and self-reported usual practice<sup>80, 103, 177</sup>. The target clinical practice of the GPs who attended the workshops was their delivery of the model OA consultation in day-to-day practice, and ideally this would be measured by direct observation in real-time practice. However, given that 12% of GP consultations are for musculoskeletal problems and of these about 20% are for OA related problems<sup>178</sup>, in only about 2-3% of

day-to-day GP consultations would the model OA consultation at best be expected to be delivered. To observe these consultations, either directly or from video recordings, would have required observation of a large number of consultations and in terms of feasibility and cost this was simply not possible.

For this thesis it was deemed appropriate to obtain complementary data using both direct and indirect methods. The use of simulated or standardised patients “consulting” GPs was a proxy method for direct observation of routine clinical practice. The indirect method to assess clinical practice consisted of a questionnaire focused on self-reported usual clinical practice.<sup>80, 103, 118, 179</sup>

### **5.3.1.1 Direct measurement of clinical practice: observation and assessment of video-recorded consultations with simulated patients**

#### *Background*

Simulated patients have been used extensively in the teaching of communication skills in undergraduate medical students, in post-graduate consultation skills training<sup>149, 180</sup> and in the assessment of clinical practice in research studies.<sup>181</sup> A simulated patient has been defined as “a well person trained to simulate a patient’s illness in a standardised way”.<sup>180</sup> The term standardised patient has also been used in this context as an umbrella term for both a simulated patient, defined as above, and an actual patient “who is trained to present his or her illness in a standardised way”.<sup>180</sup> People who take on the role of simulated patients are known as simulators<sup>149</sup> and simulator training is necessary for realistic, consistent and credible portrayal of the simulated patient.<sup>182</sup>

In the assessment of clinical practice, simulated patients can either present to the clinician unknown and unannounced,<sup>183</sup> in the style of “mystery shoppers”, or in the context of a prearranged consultation.<sup>151, 152</sup> The assessment can be undertaken directly by the simulated patient if they complete a checklist immediately following the encounter or carry a concealed audio-recorder,<sup>183</sup> or by others assessing a video or audio recording of the encounter.<sup>152, 184-187</sup> In studies evaluating the impact of context-bound skills training (see chapter 4 section 4.3.6 page 122), prearranged consultations with simulated patients were audio-recorded and transcribed before and after training.<sup>151, 152</sup> The transcriptions were used to assess clinical practice with measurement instruments developed for the purpose. In a study investigating the reliability of an instrument to assess communication quality of consultations, video recordings of consultations between GPs and simulated patients were used to undertake the assessment.<sup>184</sup>

Clinical practice of doctors assessed in “controlled representations of professional practice” has been termed “competency”, whilst actual professional practice has been termed “performance”.<sup>188</sup> The former is “what a doctor is capable of doing”, the latter is “what a doctor does in actual day-to-day practice”.<sup>189</sup> Although observation of simulated patients consulting GPs would be a direct observation of clinical practice, as defined by Hrisos et al,<sup>103</sup> it is best understood as a measure of competency rather than performance.

Clinical practice heard and/or observed during consultations with real or simulated patients has been analysed by a number of methods. Inductive or deductive approaches can be adopted.<sup>190</sup> In the former, what is heard or seen in the consultation is the starting point and is used to develop ideas, understanding and general theories about what is taking place in the consultation. In the latter, an already developed theory or hypothesis is the starting point



and what is heard or seen in the consultation is used to test the hypothesis. Inductive methods have been used in many studies, including those investigating GPs' responses to patients presenting with unexplained symptoms <sup>187, 191</sup> and GPs' use of support for self-management in consultations for long-term conditions. <sup>192</sup> Deductive approaches have used: i) checklists derived from notions of what should occur in a consultation for assessment, either completed by simulated patients immediately after the consultation, <sup>183</sup> assessors analysing transcripts of audio-recorded consultations <sup>151, 152</sup> or by assessors viewing and listening to video-recorded consultations; <sup>184</sup> and ii) coding schemes derived from previous qualitative analysis of consultations <sup>193</sup> and derived from theory. <sup>194</sup>

The key factors to consider for this thesis were: i) whether simulated patients should be announced or unannounced, ii) whether assessment should be undertaken by simulated patients using a checklist or by independent assessment of a video or audio recording, iii) whether to use a deductive or inductive approach for analysis and iv) how the "simulated patient illness" should be developed? In addition, the content of the training of the simulators and the development of the assessment measure had to be determined and completed.

#### *Choice of method and measure*

Observation of video-recorded consultations with announced simulated patients was preferred as the direct method of assessing practice. To assess change in clinical practice, arrangements were made for the consultations to be undertaken before and twice after the workshops. A deductive approach to assessment was chosen as the most appropriate analytical approach, using a quantitative instrument completed by independent observers and used to rate the extent to which the tasks of the consultation had been undertaken. The rationale for, and details of, these choices are given below.

Video-recording was preferred to audio-recording, or assessment by simulator, in order to capture and assess both verbal and non-verbal aspects of the consultation. For logistic reasons, linked to setting-up of video equipment, this ruled out the use of unannounced simulated patients.

A deductive approach to the measurement of behaviour in the video-recordings of simulated patients was chosen because the desire was to measure the impact of the workshops on a pre-defined set of behaviours, and a quantitative approach chosen as the clinical practice to be measured - delivery of the model OA consultation - was task orientated and so each task could be measured as “performed or not performed”.

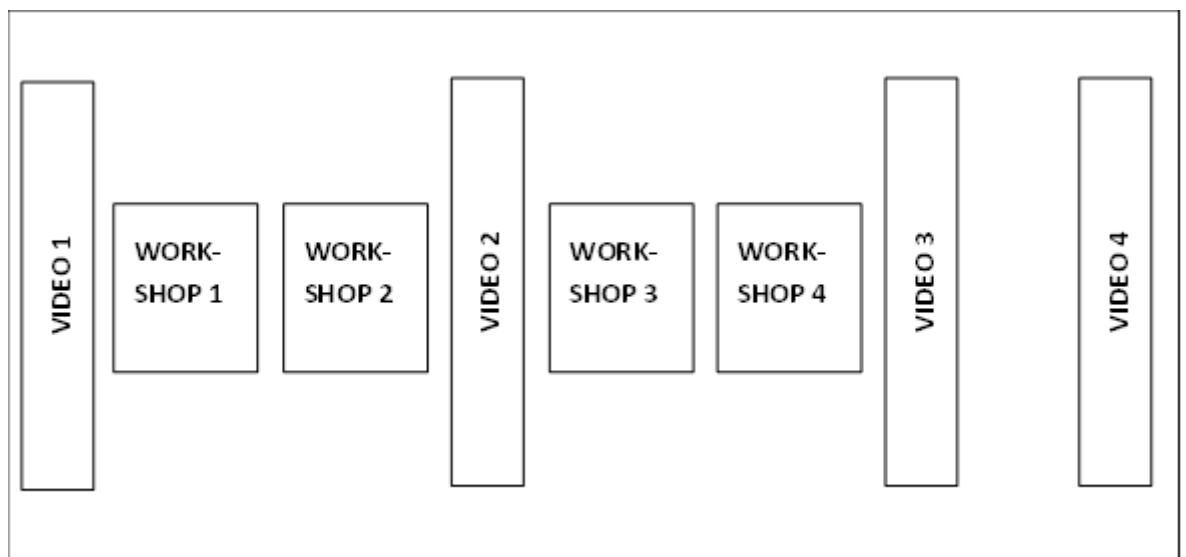
A before-and-after design to evaluate change in clinical practice was chosen to allow assessment of change in clinical practice of individual GPs (and so capture paired data for analysis), with the further consideration that it was deemed feasible given the constraints of the MOSAIC trial timelines. Three time-points were chosen: i) baseline, about a month before the first workshop, ii) within a month of the last workshop to capture short term impact on clinical practice, and iii) about five months after the last workshop to capture longer term impact on clinical practice. A work package was organised with the MOSAICS trial team to develop the scenarios and training for the simulators to ensure that the “illness” portrayed by the simulators was realistic, consistent and believable (reported in section 5.3.7.1 page 174 below).

#### *Practicalities of video-recording consultations with simulated patients*

GPs in the active arm practices were invited to undertake video-recorded consultations in their own surgeries with simulated patients at the following time-points:

- Video 1 - before the workshops for assessment and educational purposes
- Video 2 - between the second and third workshops for educational purposes only
- Video 3 - one month after the workshops for assessment
- Video 4 - five months after the workshops for assessment

The schema for this activity is shown in box 5.2. Individual copies of videos 1 and 2 were given to GPs during the workshops to enable them to reflect on their own consultations and share these reflections during the skills training sessions in workshops 2 and 3. Henceforth, for brevity, video-recorded consultations with simulated patients will be referred to as “videos”.



Box 5.2 Schema of relative timings of video-recorded consultations with simulated patients and workshops

The schedule for undertaking the videos at each time-point was as follows:

- The MOSAICS trial nurse booked a morning session with each practice to undertake the videos
- The nurse and simulator set up for the session in a spare consulting room and GPs in turn undertook the consultation
- The practice nurse checked that GPs had given consent for the video to be used for research purposes (previously sought in the baseline questionnaire of the before and after survey appendix 5.1 page 358 but could also be obtained just before the first video session)
- GPs were given a computer summary of the details about the simulated patient they were to consult (example shown in appendix 5.2 page 359), a paper version of the MOSAICS template (appendix 5.3 page 360), and instructions for the video (for video 1 “please manage the presenting problem as you would normally”; for videos 3 and 4 “please manage the presenting problem as you would do in the MOSAICS study”)
- At each time-point the simulated patient was unknown to the GP and therefore could serve as a proxy for a patient first presenting with a joint problem.
- The trial nurse took the video recordings back to the research centre at Keele and transferred them onto a secure server used for storing data at the research centre.

The methods and measures for the assessment of the videos by independent assessors are described in detail in chapter 6.

### **5.3.1.2 Indirect measurement of clinical practice: self-report of usual practice for OA**

#### *Background*

Self-report is a widely utilised method of assessing clinical practice, as it is for assessing behaviour in general and can be undertaken with questionnaires or interviews.<sup>80, 179</sup> Quantitative data can be more readily obtained with the use of questionnaires with their more structured approach and wider reach. One approach in questionnaires on self-report of clinical practice, designed to provide some ‘anchoring’ or standardisation and comparability between clinicians or within the same clinician over time, is the use of vignettes<sup>195, 196</sup>. A vignette has been described as “a brief, written case history of a fictitious patient based on a realistic clinical situation that is accompanied by 1 or more questions that explore what a physician would do if presented with the actual patient.”<sup>195</sup> Vignettes have been used in assessing clinical practice of GPs and allied health professionals consulting about musculoskeletal conditions including OA and back pain,<sup>197-200</sup> and evidence suggests that clinicians’ self-reported performance in vignette studies is similar to directly measured performance and better than review of medical records.<sup>103, 195, 196</sup>

#### *Choice of method and measure*

A questionnaire survey of the GPs who attended the workshops, using a vignette of an older patient presenting with peripheral joint pain, was chosen as the indirect method to evaluate clinical practice for the management of OA. The research design to detect change was “before-and-after”, a practical and feasible approach which mirrored the design for direct observation of clinical practice. The focus of the questionnaire was on clinical practice for the management of OA as promoted in the workshops, in order to investigate if clinical practice in this area had changed after the workshops.

#### *Practicalities of use of this method and measure in this thesis*

All GPs participating in the MOSAICS trial were sent a postal invitation to undertake the survey (appendix 5.4 page 362), a participant information sheet (appendix 5.5 page 365) a baseline questionnaire and consent form (appendix 5.1 page 358) prior to the workshops. A reminder email was sent at two weeks, and a reminder letter (appendix 5.6) and the questionnaire were sent at one month to non-responders. GPs who responded to baseline and who were invited to attend the workshops (GPs working in the practices in the MOSAICS active arm) were sent follow-up questionnaires at: one month and five months after the workshops, with reminders as for the baseline survey. The questionnaire, information sheet and invite letters received ethical approval from Cheshire Research Ethics Committee (26<sup>th</sup> October 2010, reference: 10/H1 017176, appendix 5.7 page 366).

The baseline questionnaire included a section on GP demographics: year of qualification, type of GP, musculoskeletal experience or expertise, sex and personal history of joint problems in addition to the vignette (appendix 5.1 page 358). A draft of the questionnaire was piloted for understanding and acceptability with seven GPs working in the research centre at Keele University, and minor changes were made to phrasing of some questions to increase clarity and reduce ambiguity.

### **5.3.2 Methods and measures for question 2: increased GP uptake of NICE OA recommendations**

#### *Background*

The uptake of guidelines by clinicians as an approach to effecting a change clinical practice was introduced in chapter 2 (see section 2.4.4.1 page 53 “stages of change” model introduced by Pathman et al <sup>93</sup> was presented in that chapter and, to recap, it proposes that

the uptake of new recommendations in clinical practice guidelines by clinicians takes place across four stages: they initially need to be aware of the recommendation, then agree that their practice should be in line with it, then be able to adopt it in their practice, and finally adhere to the recommendation in the day-to-day care of people to whom the recommendation applies. The model has been shown to hold true for the uptake of recommendations on vaccination <sup>93</sup> (the original study in which the model was tested) and for recommendations on hypertension. <sup>201</sup> A questionnaire based on the Pathman model was developed and tested in the study on the uptake of hypertension recommendations and was made available by Heneghan of the University of Oxford (first author on the hypertension recommendations paper) for use in this PhD study (appendix 5.8 page 367).

#### *Choice of method and measure*

A questionnaire adapted from the Oxford hypertension recommendations questionnaire was chosen as the method and measure to investigate the awareness, agreement and adoption of recommendations in the NICE 2008 OA Guideline. The recommendations investigated were those which were central to the model OA consultation, namely:

- Providing support for self-management for people with OA
- Providing written information on OA
- Advising people with OA about exercise and physical activity
- Offering people with OA, when relevant, interventions to lose weight

#### *Practicalities of use of this method and measure in this thesis*

The questionnaire (appendix 5.1 page 358) was combined, piloted and mailed with the vignette questionnaire; with piloting and mailing as described in section 5.3.1.2 above.

### **5.3.3 Methods and measures for question 3: change in status of determinants of change**

#### *Background*

The evaluation of whether factors identified as determinants of behaviour change are in themselves changed by interventions developed to address them, has been promoted and used in process evaluations of behaviour change interventions.<sup>118, 167</sup> French et al in a study to implement best practice for the management of low back pain included determinants, which had been identified in a target group analysis and theorised to be mediators of behaviour change, as process outcome measures.<sup>118</sup> McKenzie et al in a cluster trial of an intervention to increase GP adherence to recommended practice for the management of dementia included nine TDF domains as process outcome measures which they hypothesised were mediators of GP behaviour.<sup>167</sup>

#### *Choice of method and measure*

The method chosen to explore the impact of the workshops on determinants of change consisted of a self-report questionnaire completed by participating GPs. The questionnaire included determinants which were identified as relevant to this PhD study (see chapter 4 table 4.1 page 133) and which were considered on theoretical grounds to be potential mediators of change. The questionnaire was created by translating each relevant determinant into a question (see section 5.3.7.4 below for more details).



#### *Practicalities of use of this method and measure in this thesis*

The questionnaire (appendix 5.1 page 358) was combined, piloted and mailed with the vignette and the uptake of NICE recommendations questionnaires; with piloting and mailing as described in section 5.3.1.2 above.

### **5.3.4 Methods and measures for question 4: learner reactions in GPs who attended the workshops**

#### *Background*

The reactions and views of learners attending educational and training activities are frequently ascertained as a method of evaluating the quality and impact of these activities. In a systematic review of inter-professional education, two-thirds of the 21 studies included in the review reported on learner reaction.<sup>172</sup> Learner reactions have been defined as: “learners’ views on the learning experience, its organisation, presentation, content, teaching methods, and aspects of the instructional organisation, materials, and quality of instruction.”

<sup>173</sup>

#### *Choice of method and measure*

Learner reactions to the workshops were measured by administration of a brief self-complete questionnaire at the end of workshop 3 (the last one in the series of principal behaviour change intervention workshops).

#### *Practicalities of use of this method and measure in this thesis*

Questionnaire wording and items were developed with the advice of the study’s educational advisory group (see chapter 4 footnote y page 133). Questions with closed responses elicited

views on: level of satisfaction with the workshops, proficiency of facilitators, willingness to recommend workshops to others, applicability to clinical practice, appropriateness of content, and confidence in undertaking aspects of the model OA consultation. Three open response questions elicited views on: what was most useful in getting ready to deliver the model OA consultation, what else might have been included in the workshops, and how the training could be refined (appendix 5.9 page 368). The questionnaire was administered during the last ten minutes of workshop 3 and GPs completed it before leaving the session. The GPs were asked to complete the questionnaire independent of each other and to refer back to all the workshops they had attended when answering it.

### **5.3.5 Methods and measures for question 5: implementation of the model OA consultation in day-to-day practice**

#### *Background*

The aim was to evaluate the extent to which the model OA consultation had been implemented in day-to-day practice. This evaluation was at the level of the active arm of the MOSAICS trial, i.e. the day-to-day practice of all the GPs in the four practices in that arm. The logistics of directly observing day-to-day practice of these GPs posed the same problems as those discussed above for directly observing clinical practice of the GPs who attended the training, and the conclusion was that this approach was simply not feasible or affordable.

However, there was an opportunity to elicit patients' own report of day-to-day practice, namely among patients who attended the OA clinic during the conduct of the trial. These patients had first consulted a GP about the joint problem (the trial protocol stipulated that patients had to have first seen the GP before being referred to the OA clinic) and it was

during this first consultation that the GP was to deliver the model OA consultation. The OA clinic was scheduled about two weeks after the GP appointment, and there was an opportunity to ask patients during the clinic to report on the delivery of the model OA consultation at the earlier GP appointment.

In a systematic review investigating the use of valid proxy measures of clinical behaviour, <sup>103</sup> patient report as a proxy for direct measurement of clinical practice has been found to be more accurate than medical record review and clinician self-report, particularly in studies assessing counselling and delivery of routine tasks. The review concluded that patients accurately reported not receiving advice or having their blood pressure taken, but were less accurate in reporting when they had received such activities.

Audit is a method frequently employed to determine the extent to which actual practice complies with recommended practice <sup>97, 98</sup> and requires that criteria (definitions of specific aspects of recommended practice) and, for each criterion, a standard (the proportion of instances of actual practice when the criterion should be met) are developed. For example, when auditing the care of people with diabetes a criterion could be that people with type 2 diabetes have their glycosylated haemoglobin (a measure of diabetes control) measured annually and that the standard for this could be that it had been met in 90% of instances. Definitions for criteria are directly derived from statements describing recommended practice. Standard setting can be derived from a previous survey of practice, and the standard set at or above the level currently being attained. If no previous survey has been done, a standard can be selected that has face validity to those undertaking the audit. In the latter situation this is often less than 100%, since meeting criteria at every relevant instance is commonly held to be unattainable in the reality of day-to-day practice. <sup>97</sup>

For the purposes of evaluating the implementation of the model OA consultations, the tasks of the consultation could be used as criteria, and standards set for their delivery. For example, a criterion might state that “the GP should tell the patient what they thought the problem was due to” and the standard for this might be that this should have been undertaken in 90% of instances.

#### *Choice of method and measure*

An audit of delivery of the model OA consultation by nurse-administered questionnaire during the OA clinic, was chosen as the method to evaluate implementation of the model OA consultation at practice level. Criteria were derived from definitions of model OA consultation tasks, and, in the absence of prior data on the delivery of the model OA consultation, 80% standards, requiring the criteria to have been met in four out of five consultations, were chosen as realistic for consultation delivery.

#### *Practicalities of use of this method and measure in this thesis*

The number of model OA consultation tasks whose delivery could be elicited by the nurse during an OA clinic appointment was limited to four tasks. This was regarded as all that was do-able in the clinic appointment without adversely affecting the clinical purpose of the appointment. Tasks were chosen as criteria on the basis that it was helpful for the nurse to know if they had been delivered and that they were key elements of the model OA consultation. The four criteria covered: eliciting patient ideas or concerns about the problem, giving the diagnosis, providing an explanation and giving written information. The criteria and wording of the questions for eliciting delivery are shown in table 5.2.

Criterion	Question to elicit delivery
The GP during the consultation in which the patient was referred to the OA clinic:	
• Elicits the patient's ideas about the problem.	Did the GP ask you what you thought the problem was due to?
• Tells the patient what they think the problem is due to.	Did the GP tell you what they thought the problem was due to?
• Explains to the patient what osteoarthritis is	Did the GP explain to you what osteoarthritis is?
• Gives the patient the OA Guidebook to read	Did the GP give you the osteoarthritis guidebook to read?

Table 5.2 Criteria for model OA consultation delivery and questions to elicit delivery

During the first appointment at the OA clinic, the practice nurse undertaking the clinic asked the patient at the start of the appointment, when asking about the prior GP consultation, the four questions in box 5.2, in the format shown. The four questions were listed on the case report form, a form used by the nurse to record activity undertaken in the OA clinic, in the format shown in the box and with three response boxes (coded as YES / NO / MAYBE) next to each question. Nurses were trained to ask the questions and record coded responses during their training for the MOSAICS trial.

### 5.3.6 Analysis

#### 5.3.6.1 Clinical Practice

##### *Observation and assessment of clinical practice with simulated patients*

The measurement and analysis of clinical practice observed in the videos is described in detail in chapter 6.

### *Self-report of usual practice for OA vignette questionnaire*

This questionnaire, and those on uptake of NICE OA recommendations and determinants of change, were included in a postal survey of GP participating in the MOSAICS trial. Number of GPs mailed and survey response at baseline, one month and five months was determined. A descriptive analysis of baseline characteristics of responding GPs was performed.

Data from a limited number of GPs was expected to be available for analysis of questionnaire responses: about 24 GPs were due to attend the workshops and to be invited to complete the vignette questionnaire. Although response by GPs to surveys is often low,<sup>146</sup> it was anticipated that the GPs participating in the MOSAICS trial would be motivated to complete the questionnaire and a reasonable (estimated 60%) response was expected at baseline and at follow-up. Given this assumption, data from at most about 14 GPs was expected to be available at baseline and follow-up. For this reason analysis of these data was exploratory and the plan was to perform: i) a descriptive analysis of baseline responses to the vignette, and ii) a descriptive comparison only, without statistical tests, of baseline and follow-up data to explore potential areas of change.

### *Analysis of free text response*

In the context of the patient described in the scenario, GPs were asked to give free-text responses to three questions: i) what diagnosis would you give? ii) how would you describe the diagnosis to the patient? and iii) what is the future likely to hold? To summarise the data and investigate if the nature of the responses changed after the workshops compared with baseline, a typology was constructed to enable the responses to each question to be classified by a limited number of categories. Categories were to be mutually exclusive and exhaustive,

so that each response could be classified by a single category and all responses could be classified by an available category.

Draft categories were developed for each question by MP reading all the responses (those at baseline and those after workshops) to each question and drawing up an initial set of draft categories. Two other researchers then independently repeated this task, and these two sets of draft categories were compared with the initial set. Agreement was reached on a final set of categories by formal discussion at a meeting between these three people with the input of a fourth researcher who had not undertaken the above task.

Using the typology developed above, all the responses to the three questions were allocated independently by three researchers into one of the categories relevant to the question. Any disagreements were resolved by discussion and with input of a fourth researcher. A descriptive account of the baseline categories and of any change in the free text responses over time (i.e. after the workshops) was then undertaken.

#### **5.3.6.2 Uptake of NICE OA recommendations questionnaire**

Responses utilised a five point Likert scale and were dichotomised: responses 1, 2, 3 and 4 comprising one group and response 5 the other. The rationale for dichotomising the responses in this manner was to compare GPs who reported limited (a response of 4 or below) awareness / credibility / agreement / adoption with those who reported full (a response of 5) awareness / credibility / agreement / adoption. Data from a limited number of GPs was expected for this questionnaire for reasons given in section 5.3.6.1 (both questionnaires were included in the same postal survey). Again for this reason analysis of

these data was exploratory and the plan was to perform: i) a descriptive analysis of baseline responses to the questionnaire, and ii) a descriptive comparison only, without statistical tests, of baseline and follow-up data to explore potential areas of change.

#### **5.3.6.3 Determinants of change questionnaire**

Data from a limited number of GPs was expected for this questionnaire for reasons given above. Again analysis of these data was exploratory and the plan was to perform: i) a descriptive analysis of baseline responses to the questionnaire, and ii) a descriptive comparison only, without statistical tests, of baseline and follow-up data to explore potential areas of change.

#### **5.3.6.4 Learner reactions questionnaire**

Data from the GPs who completed the questionnaire at the end of workshop 3 would be available for analysis. The plan was to perform: i) a descriptive analysis on quantitative responses and ii) a simple qualitative thematic analysis of open responses. Open responses were elicited for four questions (box 5.3) and only responses to questions one, two and four were used to evaluate impact of the workshops; the other question focused on GP views on the content of similar workshops for other GPs and not on their reaction to the current workshops. The responses to each question were read, sorted by content and grouped by workshop element referred.



Question 1: We would like to know which parts of the training you felt were most useful in getting you ready for delivering the new approach in the consultation?

Question 2: Should we have included anything else?

Question 3: We are going to offer a shorter version of the training to the control practices at the end of the study. We would like your opinion as to which parts we should include and which we could leave out?

Question 4: Any other comments?

Box 5.3 Questions with open responses included in the learner reaction questionnaire

### **5.3.6.5 Implementation of the model OA consultation in day-to-day practice**

Analysis was undertaken in the manner of a simple audit. For each criterion the proportion of instances when the criterion had been met was calculated and compared with the standard for that criterion.

### **5.3.7 Development work**

Developmental work was undertaken on methods and measures described above: i) for measurement of practice in videos (see section 5.3.1.1 page 155), on simulated patient scenarios, and simulator recruitment and training; ii) for self-report of practice (see section 5.3.1.2 page 160), on a vignette for self-reported practice for OA; iii) for uptake of NICE OA recommendations (see section 5.3.2 page 162), on adaptation of existing questionnaire on uptake of guideline recommendations to apply to NICE OA Guideline recommendations; and iv) for change in status of determinants of change (see section 5.3.3 page 164), on a questionnaire to measure these determinants.

### **5.3.7.1 Simulated patient scenarios, and simulator recruitment and training**

Simulated patients were involved both with delivering the skills training sessions in the workshops (see chapter 4 section 4.3.6 page 122) and with the videos to evaluate GP clinical practice described in this chapter. The development of their scenarios described below applied to both purposes, and was undertaken with members of the MOSAICS trial team.

#### *Scenario development*

The simulated patient scenarios were developed in five stages.

First, the framework of the scenario, based on what GPs are recommended to elicit in a consultation <sup>128</sup>, was constructed : i) presenting problem, ii) past medical and social history, iii) ideas and concerns about the problem, expectations about the consultation and iv) knowledge and beliefs about OA and its treatment.

Second, the issues which the scenario would need to cover were identified, i.e. those which the GP would need to address when delivering key elements of the model OA consultation (see chapter 4 box 4.4 page 132): i) what OA is, its prognosis and treatment (for “explaining the diagnosis”), ii) pain management for OA (for “providing analgesia advice / prescription”), and iii) self-management of OA, iv) exercise and physical activity for OA and v) diet and weight loss (for “promoting and supporting self-management”). <sup>202</sup>

Third, an initial list of patient ideas, beliefs, attitudes, expectations about these issues, drawn from the qualitative literature on patient experience of OA <sup>7, 9, 44, 203-207</sup> was compiled (table 5.3).

Issue	Content to be considered for the scenarios
Self-management	<ul style="list-style-type: none"> <li>• Patient expectation of the consultation - might be for oral medication or a surgical referral and not help with self-management</li> <li>• The use of complementary therapies</li> <li>• Feeling that self-management advice is not appropriate for them as already “doing it”</li> <li>• Patients having exhausted their coping strategies and wanting the professional to take over</li> <li>• The interference of self-management on daily life - the “hard work” of being a patient</li> </ul>
What is OA, its prognosis and treatment	<ul style="list-style-type: none"> <li>• Beliefs such as: inevitable part of ageing, inevitably progressive, same as Rheumatoid Arthritis, that nothing can be done</li> <li>• The complexities of lay understandings of OA such as: caused by previous “hard work” or previous injuries, linked to getting older as their peers also experience pain</li> </ul>
Pain management	<ul style="list-style-type: none"> <li>• Use of complementary therapy</li> <li>• Strong belief in a treatment with no proven benefit</li> <li>• Unrealistic goals, for example to be completely pain free</li> <li>• Interaction of analgesics with other medication</li> <li>• Misunderstandings about the optimal use of analgesia</li> <li>• Previous negative experience of analgesia</li> <li>• Fear of not masking the pain with analgesia</li> </ul>
Exercise and physical activity	<ul style="list-style-type: none"> <li>• Expecting something else from the consultation</li> <li>• Sceptical and cynical about the benefit of exercise</li> <li>• Not liking gyms</li> <li>• Worries about how exercise might affect other conditions and whether it is safe</li> <li>• Previous advice from healthcare professionals, such as being told that they will only benefit from joint replacement</li> </ul>
Weight loss	<ul style="list-style-type: none"> <li>• Expecting something else from the consultation</li> <li>• Previous (negative) experience of losing weight</li> <li>• Financial constraints in affording a healthy diet</li> <li>• Sceptical about the benefits of weight loss</li> <li>• Unrealistic goals, such as losing a stone in a month</li> </ul>

Table 5.3 Content to be considered for issues to be covered by scenarios <sup>7, 9, 44, 204-207</sup>

Fourth, the initial list was appraised by members of the MOSAICS trial team, <sup>z</sup> and as a consequence was expanded and modified, yielding the final list of issues to be considered in developing the simulated patient scenario shown in appendix 5.10 page 369.

Fifth, three basic patient scenarios were developed on the basis of these group discussions, each one representing different ideas and concerns about the nature of OA and different co-morbidities, and each one covering a different aspect of self-management: exercise, weight loss and pain management. Each basic scenario had two versions: in one the simulated patient presented with chronic knee pain and in the other with chronic hip pain. Synopses of the six scenarios which were developed and the issues they related to are shown in table 5.4

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<sup>z</sup> MOSAIC trial team members involved were: myself, KD (chief investigator), CM (pain psychologist), EH (exercise scientist leading on nurse training), VC (communication skills trainer) and AM (qualitative researcher undertaking practitioner and patient interviews)

Scenario synopsis	Issues addressed
Scenarios A (knee) and B (hip) consisted of a patient with ischaemic heart disease, who had tried simple analgesia and thought their problem was due to “wear and tear”. They had concerns about exercise for example, that exercise was not safe and that it was difficult to exercise locally (appendix 5.11 page 372)	Idea that the problem was due to “wear and tear”  Worried about exercise: not safe and lack of access
Scenarios C (knee) and D (hip) consisted of a patient with diabetes who had tried over the counter painkillers and was concerned they had rheumatoid arthritis. They were overweight and had tried to lose weight many times before and had not succeeded (appendix 5.12 page 374)	Concern that the problem was due to rheumatoid arthritis  Negative previous experience of losing weight
Scenarios E (knee) and F (hip) consisted of a patient with hypothyroidism who only occasionally took painkillers and thought they had arthritis as they were getting older. They had concerns about taking tablets which they thought were addictive and often give them side effects (appendix 5.13 page 376)	Idea that the problem was due to “arthritis” due to ageing  Worried about taking analgesia: addictive and frequent side effects

Table 5.4 Synopses of six scenarios developed by issues addressed

### *Simulator recruitment and training*

Keele University Medical School has a long established pool of simulators who are involved with undergraduate and postgraduate teaching. Simulators from this pool were invited to undertake the role of simulated patients for this study. Six experienced simulators agreed and attended two half-day training sessions run by myself and VC (experienced GP communication skills trainer).

In the first session the simulators were given an overview of the MOSAICS trial, the workshops and their evaluation. Simulators were given two brief scenarios, one of a grandparent of a child presenting with a sore throat and with an expectation that antibiotics

are prescribed, and one of an older patient presenting with knee pain and with an expectation that an x-ray was arranged, and in turns acted out the scenarios with myself or VC as the GP. The objective of this session was to assess their level of competency in skills needed for workshop skills training sessions: their ability to “pause, rewind and feedback” during a session. These are techniques used to: i) pause simulated consultations to allow discussion, ii) go back to an earlier part of a consultation and restart, and iii) give feedback in role to the trainee, and are techniques used in undergraduate medical training<sup>208</sup> and which VC was expert in utilising in skills training. VC, who had previously worked with the simulators and knew them to have been trained and experienced in the use of these skills, assessed, after this session, that they were all currently competent in their use of these skills.

The six simulated patient scenarios were presented, discussed and one allocated to each simulator. The simulators were then instructed to construct a biography for their simulated patient and to send in the biographies prior to the second training session to VC and myself. A copy of the OA Guidebook was given to each simulator, who was asked to read it to enhance their knowledge of OA, its impact on patients and its treatment.

The second session started with further discussion about the scenarios and biographies, the latter of which simulators had all prepared and sent as requested, to answer any queries from the simulators. Following this, each of the six simulators at the session, as their simulated patient, was video-recorded consulting with myself as a GP undertaking the model OA consultation. This activity was observed by the other simulators, and VC, CM and KD. The objectives were; i) to enable the simulators to practise the role and receive feedback, and ii)

record examples of the model OA consultation in action.<sup>aa</sup> After each simulated consultation VC provided feedback, and, after all the consultations had been undertaken, VC led a group discussion on how to achieve a consistent approach to presenting the biography, scenario and level of challenge when undertaking the video-recorded consultations, i.e. those which would be used to evaluate the workshops.

By the end of the training, simulators had all successfully portrayed their simulated patient to VC (and others), and, given their previous experience and performance during the training, VC was satisfied that they were all competent to present their simulated patient in a realistic, consistent and believable manner.

#### **5.3.7.2 Vignette for measurement of self-report of clinical practice**

A vignette was developed for the indirect measurement of clinical practice (see section 5.3.1.2 page 160). A vignette of an older patient presenting with chronic joint pain and options for management was adapted from that used in studies which investigated clinical practice of GPs and physiotherapists for the management of chronic knee pain<sup>199, 209</sup> and evaluated training of physiotherapists in the Benefits of Effective Exercise for Knee Pain (BEEP) trial.<sup>210</sup> The vignette in this thesis used wording developed for the GP study and described an older female presenting with gradually worsening knee pain (box 5.4) and GPs were asked to rate the severity of the symptoms and underlying problem, report on what investigations they would organise, what diagnosis, explanation and prognosis they would give, and what approaches to treatment and referral they would adopt (appendix 5.1 (page

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<sup>aa</sup> These video-recordings of delivery of the model OA consultation were used as demonstration videos in MOSAICS training and henceforth in this thesis are referred to as “demonstration videos” They were in addition used in the training developed for those agreeing to assess the videos (see chapter 6 section 6.5.5.3 page 202).

358), section 3). The structure and content of this self-report questionnaire (as detailed in appendix 5.1 page 358) mirrored those in the previously published studies.<sup>199, 209, 210</sup>

Presented below is a scenario of a patient <b>with a chronic joint problem</b> who is seeing you for the first time. All questions that follow relate to the care you would give this particular patient. Think about the patient's <b>first consultation</b> with you.	
<b>Patient</b>	Mrs Jones, 58-year-old Prison Officer
<b>History</b>	<p>First presentation of gradually worsening bilateral knee pain over 2 years</p> <p>No history of trauma</p> <p>Pain always present when walking and after sitting, worst when climbing stairs</p> <p>No night pain.</p> <p>Managing activities of daily living. Difficulty gardening.</p> <p>Stopped going to gym – thinks was making pain worse</p> <p>Only treatment tried is ibuprofen once or twice when pain “really bad” no benefit.</p> <p>Came today finding work increasingly difficult due to the stairs</p> <p>Usually well – no comorbidities</p>
<b>Medication:</b>	Nil
<b>Examination</b>	<p>Body Mass Index 33</p> <p>Knees – no effusions. Joint tenderness upon palpation. Bilateral coarse crepitations.</p> <p>Slightly reduced flexion of the right knee</p> <p>Hips – no abnormality detected</p>

Box 5.4 Vignette used in questionnaire to capture self-report of usual practice for OA

### 5.3.7.3 Measure for evaluation of uptake of NICE OA recommendations

The measure was developed to evaluation uptake of NICE OA recommendations (see section 5.3.2 page 162). Using the Pathman model (see section 5.3.2 page 162) and the format of questions in the Oxford hypertension study questionnaire (appendix 5.8 page 367), questions were formulated on awareness of the NICE 2008 OA Guideline, on credibility of NICE as a source of guidance, and on awareness, agreement and adoption for four NICE 2008 OA Guideline recommendations relating to support for self-management, written information, exercise and physical activity, and weight loss (appendix 5.1 (page 358), section 5 in the questionnaire, and example box 5.5).



How much have you heard or read about the recommendation that healthcare professionals should offer **all** patients with osteoarthritis **written information** about their condition?

<b>Nothing at all</b>		<b>Some</b>		<b>A lot</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

5.4.1. Do you agree with this recommendation?

<b>Completely disagree</b>		<b>Somewhat agree</b>		<b>Completely agree</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

5.4.2. Do you provide **written information** for patients with osteoarthritis?

<b>Never</b>		<b>About half the time</b>		<b>Always</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

Box 5.5 Example of questions to determine awareness, agreement and adoption of NICE 2008 OA recommendations

### 5.3.7.4 Measure for evaluation of status of determinants of change

The measure was developed to evaluate change in status of determinants of change (see section 5.3.3 page 164). A questionnaire was developed de novo for this study with items developed from published suggestions by Michie et al for interview questions to elicit views on the Theoretical Domains Framework.<sup>105</sup> Domains identified in the target group analysis were reviewed and seven domains were identified as potential mediators of change for GP clinical practice (table 5.5). Questions were constructed for each of these determinants linked to 5-point Likert response scales (appendix 5.1 (page 358), section 4 (knowledge) and section 5 (other determinants) in the questionnaire, and example in box 5.6). In addition to the questions on identified determinants of change, four ‘control’ questions were included

on level of access to services for people with OA (physiotherapy, occupational therapy, rheumatology and orthopaedics), the assumption being that any change in these would not be related to workshop training.

<b>TDF* Domain</b>	<b>Theorised mediator of change</b>
Knowledge	GP knowledge about OA
Social/professional role and identity	GP perceived role in managing OA
Beliefs about capabilities	GP confidence in managing OA
Beliefs about consequences	GP beliefs about consequences for patients of managing OA in line with NICE OA guidance
Motivation and goals	GP priority given to OA
Environmental context and resources	GP perceived time to manage OA
Emotion	GP emotional response to patients consulting with OA

\* Theoretical Domains Framework

Table 5.5 Theorised mediators of change by Theoretical Domains Framework domain for which statements were constructed

6.5 Do you feel confident about diagnosing osteoarthritis clinically (without the use of x-rays)?				
<b>Not confident</b>		<b>Somewhat confident</b>		<b>Very confident</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

Box 5.6 Example of statement on a theorised mediator of change and responses included in the before and after workshop GP questionnaire

## **5.4 Conclusions and link to next chapter**

This chapter has described the selection and development of methods and measures to evaluate the impact of the workshops. In total, six evaluations were chosen: five at the level of the GP attending the workshops and one at the level of the practices. The GP level evaluations assessed the immediate impacts of the workshops on clinical practice (directly observed and self-reported), uptake of NICE OA recommendations, status of determinants of change, and learner reactions. The practice level evaluation assessed the more distal impact on day-to-day practice. Of the GP level evaluations, the primary one was the direct observation of clinical practice during video-recorded consultations with simulated patients, a measure of the competency of GPs in delivery of the model OA consultation. Vignette self-report of practice provided complementary data on clinical practice. The three other GP level evaluations (uptake of recommendations, status of determinants of change, and learner reactions) were secondary evaluations of the effect of the workshops. The practice level evaluation took advantage of an opportunity arising from the MOSAICS trial and was designed to provide preliminary data on the extent to which aspects of the model OA consultation were implemented in the practices during the conduct of the trial.

For the primary video-record evaluation of clinical practice, extensive work was undertaken to develop the simulated patient scenarios and train the simulators to ensure that the simulated patients were credible to the GPs who undertook the videos. The vignette, uptake of NICE OA recommendations and learner reaction questionnaires were adapted from previously developed questionnaires and, although there was no opportunity to test their psychometric properties in this study, there are data from other studies on their use. The

status of determinants of change questionnaire was developed specifically for this study and must be regarded as exploratory in nature.

In conclusion, direct measurement of clinical practice competency was the principal method chosen to evaluate impact. Other methods and measures were used to explore secondary issues relating to clinical practice, learner reactions and implementation. Chapter 6 describes in detail the methods and measures developed and tested for the principal workshop evaluation method: the direct assessment of clinical practice observed on the videos.

## **6 ASSESSMENT OF VIDEO-RECORDED CONSULTATIONS**

### **6.1 Objectives**

- To develop methodology for assessing the video-recorded consultations
- To develop a plan for analysis of GP competency and change in competency over time
- To develop, and test the use of, an instrument and rating tool to measure GP competency
  - Establish content validity of the instrument to measure GP competency in delivery of the model OA consultation observed in videos
  - Assess criterion validity of the use of a rating tool developed to assess videos
  - Assess inter-observer reliability of the use of the rating tool

### **6.2 Introduction**

In chapter 5 a before-and-after comparison of clinical practice observed in video-recorded consultations with simulated patients (“videos”) was chosen as the method by which to directly evaluate the impact of the workshops on clinical practice of GPs who attended them. This would measure competency of the GPs in delivering the model OA consultation, henceforth referred to as GP competency. The aim was to use change in GP competency, after the workshops compared with before, to evaluate impact of the workshops on clinical practice.

Clinical practice observed at one and five months after the workshops was to be the basis for evaluating short-term and longer-term GP competency respectively. A quantitative approach to measurement of GP competency was chosen as it was the competency of the GPs to undertake the specific model OA consultation tasks which was the subject of interest. A count of the number of tasks undertaken was the chosen approach to determining

competency. Critical to the determination of impact of the workshops on GP competency was: i) the methodology to assess the videos, ii) the methodology to analyse the data on GP competency, and iii) the development of a measurement instrument to determine GP competency observed in the videos. This chapter describes: i) the methodology for assessing the videos, ii) the plan to analyse change in GP competency, and iii) the development and testing of an instrument to measure GP competency.

For brevity the assessment and analysis of the videos used to evaluate the impact of the workshops (points (i) and (ii) above) is referred to as the “video study” and to differentiate this activity from work undertaken in developing and testing the measurement instrument

## **6.3 Methodology for assessing videos in the video study**

### **6.3.1 Objective**

To develop methodology for assessing the video-recorded consultations

### **6.3.2 Introduction**

The research question was whether the workshops would lead to an increase in GP competency following attendance. This required GP competency before and after the workshops to be determined and the difference calculated. Most importantly this difference needed to be determined in individual GPs, since competency rests at the level of the individual and it is at this level that actual change occurs: an individual GP becoming more or less competent in delivering the model OA consultation. GP competency would be determined by trained assessors assessing the videos undertaken before and after the workshops using a measurement instrument developed for the purpose. The need was for a

method which minimised measurement error so that any difference in GP competency determined could be attributed to a true change.

#### **6.3.2.1 Assessment method designed to minimise measurement error**

The measurement to be undertaken required assessors to make a decision as to whether a task had been undertaken based on what they had heard and observed in videos. Two potential sources of measurement error were identified: i) assessors' determination of GP competency could be affected by knowing if a video was undertaken before or after the workshops (assessors might assume that GPs would be better at delivering the model OA consultation after the workshops and their threshold for deciding if a task was undertaken would be different in videos after the workshops to that before), and ii) different assessors' determination of GP competency could be systematically different (one assessor might systematically have a higher or lower threshold for deciding if a task was undertaken than another assessor). The critical measure for this study was change in individual GP competence after the workshops. Both potential sources of error could affect measurement of the true change.

To minimise error from these two sources the assessment method incorporated three features: i) the videos of any one GP were presented for assessment in random order of their chronological sequence, ii) the videos were unmarked as to their place in the sequence and so blinding assessors as to whether a video was before or after the workshops, and iii) one assessor assessed all the videos of an individual GP.

### **6.3.2.2 Other sources of measurement error**

In addition to the considerations above, true measurement of competency could have been affected by the characteristics of the measurement instrument: that it was not measuring what it purported to measure or that its use was subject to measurement error. These issues are addressed in section 6.6: the development of the measurement instrument.

### **6.3.2.3 Choice of professional background of assessors**

The task the assessors had to perform was complex: determining GP competency for a specified set of tasks from observing a video of a consultation with all the complexity which can arise in a consultation. Although the video-recorded consultations were with simulated patients and not real patients consulting, it was anticipated, given the realistic and detailed biographies and scenarios the simulators had been given, that the recorded consultations would still be complex. In order to have assessors who were very familiar with GP consultations in general practice, and would understand the context of the consultations, it was decided to use assessors who were GPs by profession.

## **6.3.3 Methods for the video study**

### **6.3.3.1 Selection and allocation of videos to be assessed**

Videos were recorded at three time-points, before the workshops (baseline) and at one month and five months after the workshops were assessed. Videos were only assessed for GPs who had a full set of three videos: i.e. one recorded at each of the three time-points. The “full sets” of videos were randomly allocated to the assessors so that each assessor had a number of “full sets” of videos to assess, and the order in which they were presented for assessment was further randomly decided (see section 6.3.3.3 below).



### **6.3.3.2 Recruitment and training of assessors**

GPs working in the Research Institute for Primary Care and Health Sciences at Keele University and who not been involved with, or were participating in, the MOSAICS study, were invited by email to become assessors for this study. Training was arranged prior to assessment of their allocated videos. Full details of the training are given in section 6.5.5.3 in this chapter.

### **6.3.3.3 Assessment of videos**

Assessors viewed all their allocated videos in random order (both by GP and time-point) and blinded to time-point. To achieve this, the video file name was anonymised and the file date information changed so that assessors were presented with a series of alphabetically labelled videos all with the same file date. Videos were placed in a password protected folder for each assessor, and assessors were given several weeks to assess the videos, so that they could undertake the assessment within the constraints of their role at the university and at their practices. The assessors were told to assess the videos using the processes covered in the training and given a pack of written instructions and data recording sheets (details in section 6.5.5.3 in this chapter).

The duration of the videos was determined from accessing the video file data: the duration of digitally recorded videos was a routine data field in each video file.

## **6.4 Analysis Plan for the video study**

### **6.4.1 Objective**

To develop a plan for analysis of GP competency and change in competency over time.

### **6.4.2 Introduction**

The GPs were not time limited when undertaking the video and the duration of the videos was determined to ascertain: i) whether duration was similar to that of consultations in day-to-day practice and ii) whether duration altered after the workshops compared with before. The former was to help understand the generalizability of the findings and the latter to determine if workshops increased the time GPs spent consulting for OA.

The GPs who undertook the videos were the GPs who were in the practice on the day the videos were undertaken and may, or may not have attended all, some or any of the workshops. The workshop attendance registers were used to determine if the GPs with videos were: fully trained (had attended all for the two hour workshops (workshops 1, 2 and 3), partially trained (had attended two out of three of these workshops) or not trained (had attended one or none of these workshops).

The videos were assessed for the presence of the individual consultation tasks in the model OA consultation. Data for analysis consisted, for each video, and for each task, of an assessment (yes/no) of whether that task had been undertaken in that video. GP competency in delivery of the model OA consultation was defined in terms of the number of tasks undertaken in a given video. A summary measure for the competency of a GP across all tasks in each of their videos was therefore needed (the 'GP competency score'), which could then be compared across the different time points as the basis for assessing any effect of workshops on their competence in delivery of the OA model consultation.

It was postulated that some tasks may in general be more frequently delivered than others before the workshops started, and that the delivery of some tasks may be more likely to be

improved by the workshops than the delivery of others. In addition therefore to measuring the overall competency of an individual GP across all the tasks (the ‘GP competency score’), a summary measure for the delivery at each time point for each individual task across all the participating GPs was needed (the ‘task delivery score’). This would then be compared across the different time-points in order to investigate the effect of workshops on delivery of the individual tasks of the model OA consultation.

### **6.4.3 GP competency score**

Delivery by an individual GP of the model OA consultation was defined as the extent to which a GP undertook all the consultation tasks in an individual video. The GP competency score was the number of tasks assessed as undertaken in an individual video. For example, if ten tasks were assessed as undertaken in a video, the GP competency score for that video was ten.

### **6.4.4 Task delivery score**

Delivery of an individual task by the GPs as a whole was defined as the extent to which it was undertaken by all the GPs at a given time-point. The task delivery score was the number of videos at a given time-point in which the task was assessed as undertaken. For example, if at baseline a task was assessed as undertaken in nine videos, the task delivery score at baseline for that task was nine.

## **6.4.5 Analysis and statistical methods for the video study**

### **6.4.5.1 Duration of videos**

The duration of all videos was calculated in minutes. The distribution of video duration was plotted for all videos, and median and mean calculated to assess if the data were normally

distributed or not. The plan was to: i) calculate standard deviation and range, and use paired  $t$  tests <sup>176</sup> to compare the duration at the three time-points if the data were normally distributed, and ii) if not normally distributed to calculate inter-quartile range and use the Wilcoxon matched pairs signed-rank sum test <sup>176</sup> to compare duration at the three time-points. Comparisons would be baseline with one month, baseline with five months, and one month with five months.

#### **6.4.5.2 GP competency score**

The GP competency score was determined for each GP at each time-point, and for each time-point median, interquartile range and ranges for all GPs in the sample were calculated. The data was assumed to be non-parametric given the small sample size, and so the Wilcoxon matched pairs signed-rank sum test <sup>176</sup> was used to compare median GP competency score at one month with baseline, and at five months with baseline, to determine if there had been a change in competency of the GPs as a group. The Wilcoxon matched pairs signed-rank sum test is “the non-parametric equivalent of the paired  $t$  test” <sup>176</sup> and utilises a ranking analysis of the differences between paired observations (baseline – post-baseline across all GPs). The differences, positive or negative, are calculated and ranked in order of magnitude, irrespective of whether positive or negative. The ranks of the positive differences, and those of the negative differences, are separately summed and compared. The rationale for the test is that if there is no difference in competency scores between the two time-points, there will be similar a ranking distribution of positive and negative differences. Thus the sum of the ranks of the negative differences will about equal that of the positive differences. The null hypothesis, that there is no difference between the GP competency score at the two time-

points, is rejected if one of the sums is very much smaller than the other. Statistical software<sup>bb</sup> was used to calculate the level of significance of the test.

### 6.4.5.3 Task delivery score

The task delivery score was determined for each consultation task at each time-point. The desire was to determine if task delivery was increased after the workshops by comparing, for each task, task delivery scores at one month and five months after workshops with the relevant score at baseline. Paired observations of GP delivery of a task were utilised to undertake this comparison utilising the categorical data on whether a GP had, or had not, delivered the task at a given time-point. A two by two table was drawn up on the number of GPs whose delivery of the task changed, or was the same, across two time-points (table 6.1).

	Task not delivered at time-point 2 (-)	Task delivered at time-point 2 (+)
Task delivered at time-point 1 (+)	<b>a</b> No. of GPs whose delivery worsened	<b>b</b> No. GPs who delivered task at both time points
Task not delivered at time-point 1 (-)	<b>c</b> No. of GPs who did not deliver at both time-points	<b>d</b> No. of GPs whose delivery improved

Table 6.1 two by two table comparing GP delivery of a task at two time-points (“+” task delivered, “-“ task not delivered

The McNemar test with continuity correction (2-sided)<sup>176, 211</sup> was used to test the significance of the change in task delivery. This nonparametric test is recommended for use in “before and after” designs, when paired categorical data are being used, to assess the effectiveness of an intervention,<sup>211</sup> and thus is appropriate for use in assessing workshop

<sup>bb</sup> Details of the WINPEPI software can be found in Abramson, J.H. WINPEPI updated: computer programs for epidemiologists, and their teaching potential. *Epidemiologic Perspectives & Innovations* 2011, 8:1

effect on task delivery in this thesis. The test focusses on an analysis of the data in cells “a” and “d” in table 6.1 above: the data on the instances when change has occurred (in this example worsened delivery (“+” to “-“) in cell “a” and improved delivery in cell “d” (“-“ to “+”). The rationale for the test is that if there is no difference between the two time-points then it is equally likely that change will occur from “+” to “-“ as it is from “-“ to “+”. Under the null hypothesis, that there is no difference in task delivery score between the two time-points, the frequency in cell “a” would be equal to that in cell “d”. Statistical software (see footnote bb page 193) was used to calculate significance.

## **6.5 Development and testing of a measurement instrument**

### **6.5.1 Objective**

To develop, and test the use of, an instrument to measure GP competency

### **6.5.2 Background**

A measurement instrument needs to be valid, i.e. it measures what it is purported to measure, and reliable in use, i.e. as free from measurement error as possible.<sup>212, 213</sup> There are three important types of validity: content validity (have the relevant aspects of the construct to be measured been included in its development?), criterion validity (established by comparison with a “gold standard”) and, particularly if no gold standard results are available, construct validity (are the results using the instrument in accord with what would be predicted by underlying theories?).<sup>212, 213</sup> There are two major types of reliability: inter-observer reliability (judged by comparing a measurement instrument’s use by different people) and intra-observer reliability (determined by its use by the same person on different occasions).<sup>212, 213</sup> It is important however to distinguish test-retest reliability (a measure of measurement accuracy when no external changes are assumed to have influenced the measure) and

repeated use of an instrument to measure change across time or change after an intervention.

212, 213

### 6.5.3 Introduction

Aspects of both validity and reliability have been investigated in this study. The development and testing of the measurement instrument was undertaken in three phases: i) content validity established, ii) criterion validity tested, and iii) inter-observer reliability assessed (figure 6.1).

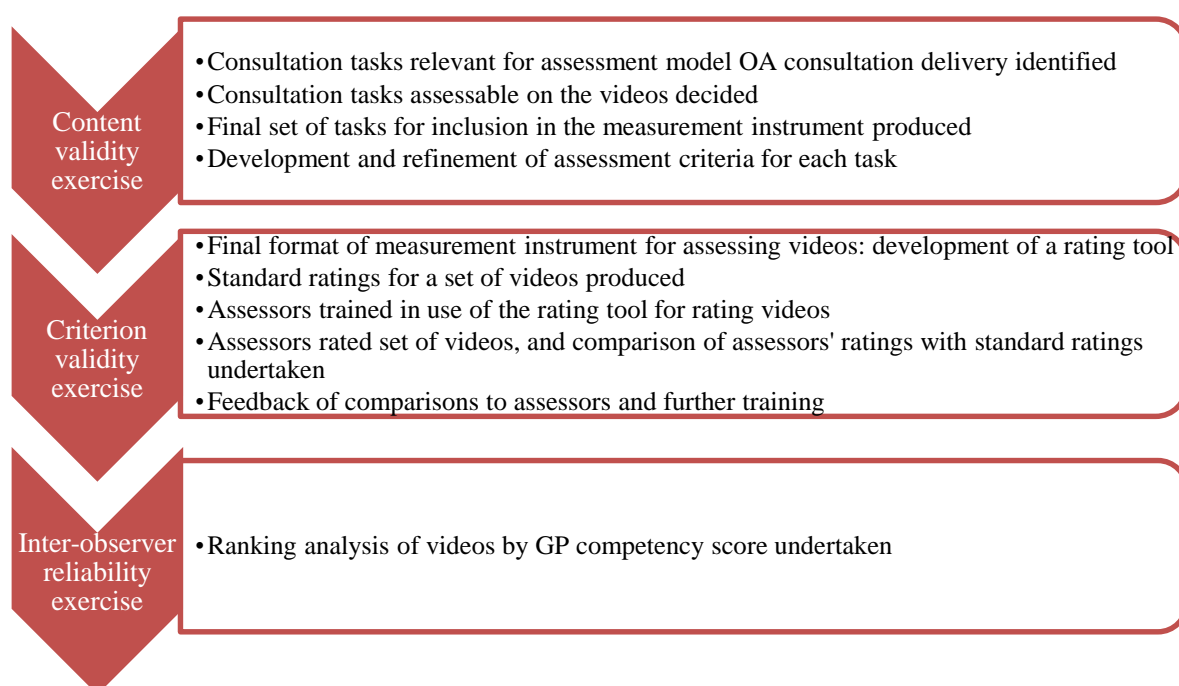


Figure 6.1 Flow diagram of phases in development and testing of the measurement instrument

### 6.5.4 Content validity exercise

#### 6.5.4.1 Objective

To develop a measurement instrument with established content validity to measure GP competency in delivery of the model OA consultation observed in videos.

#### **6.5.4.2 Introduction**

The approach to establishing content validity was to ensure that all model OA consultation tasks relevant to the evaluation of delivery of the model OA consultation in the videos had been included in the measurement instrument. The relevant tasks were those which were promoted and rehearsed in the workshop skills training sessions and could be practically assessed on a video-recording. Having identified which tasks should be included in the instrument, criteria were developed to determine whether a task had, or had not, been undertaken. The criteria did not cover the degree (for example, fully, partially, minimally) to which a task was undertaken or the manner in which it was performed, as the definition of GP competency chosen for this thesis was the number of tasks undertaken in delivery of the model OA consultation. This required a simple undertaken / not undertaken approach to measurement.

#### **6.5.4.3 Methods**

The exercise was undertaken in four steps:

1. Identification of all model OA consultation tasks addressed in workshops
2. Consideration of which of these tasks could be measured - whether a task could be practically assessed on a video
3. Presentation of proposed task list to study supervisors<sup>cc</sup> to reach agreement on tasks to be included in the measurement instrument
4. Refinement of list of tasks and development of assessment criteria for each task

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<sup>cc</sup> The study supervisors, CM, PC and KD were considered to bring specific expertise on the content of the model OA consultation, and on its delivery, as all had been closely involved with the development of the model and the workshops to effect its delivery. They all knew what was being looked for in GP delivery of the model OA consultation. For this reason the study supervisors acted as an expert panel to decide on the content of measurement instrument. This expertise was further utilised in producing standard ratings of a set of videos for the criterion validity exercise (section 6.5.5).



#### **6.5.4.4 Results**

##### *Step 1 - Identification of all model OA consultation tasks addressed in the workshops*

All model OA consultation tasks addressed in the workshops were identified by reviewing the content of the skills training sessions. The model OA consultation presented in these sessions consisted of three key tasks (see chapter 4 box 4.4 page 132) and the requirement to elicit ideas and/or prior understanding and expectations before providing information (see chapter 4 section 4.5.3.1 page 134). The delivery of the model consultation was operationalised in the skills training sessions by breaking the model down into the individual consultation tasks which would need to be undertaken (box 6.1). This list therefore was adopted as the potential pool of tasks to be assessed on the videos.

Consultation task	Example of GP behaviour - the GP:
1. Making the diagnosis	takes the history and examines the patient
2. Eliciting ideas about the problem	asks the patient what they thought the problem was due to
3. Giving the diagnosis	tells the patient what the problem is due to (the diagnosis or working diagnosis)
THE REMAINDER OF THE CONSULTATION IS FOR PATIENTS GIVEN AN OA DIAGNOSIS	
4. Eliciting ideas about OA	asks the patient what they know about OA
5. Explaining OA	gives a brief explanation of the prognosis and treatment of OA
6. Eliciting ideas about self-care for OA	asks what the patient is trying at present to help the problem
7. Promoting self-care for OA	explains the muscle strengthening exercises and that increasing physical activity can reduce pain for people with knee OA
8. Eliciting ideas about self-care support for OA	asks what the patient would like support with
9. Providing self-care support for OA	explains about the OA guidebook and clinic and offers the patient both
10. Eliciting expectations and need for analgesia	asks what the patient would specifically like help with (including if help needed for pain relief)
11. Addressing expectations and providing advice on simple analgesia	responds to the patient's expectation of the consultation and provides advice on, or a prescription for, simple analgesia

**Box 6.1 OA consultation tasks, and examples of GP behaviours addressed in workshops and required for delivery of the model OA consultation**

*Steps 2 and 3 Consideration of which tasks could be measured, and agreement on tasks to be included in the measurement instrument*

Step 2 involved critically reviewing and reflecting on the nature of the tasks listed in box 6.1. The conclusion was that “Making the diagnosis” was a complex task which includes cognitive processes by the GP in addition to the consultation behaviours of taking the history and examining the patient. The cognitive process cannot be observed or heard on a video and consequently the task of “making the diagnosis” could not be simply assessed on a video

and was proposed to be excluded from the measurement instrument. All the other ten tasks listed in column one of box 6.1, were considered as ones which could be assessed, and were therefore proposed as tasks to be included in the measurement instrument. The list and the proposed exclusion and inclusions were presented formally for discussion with the study supervisors, who agreed with the proposals.

*Step 4 Refinement of list of tasks and development of assessment criteria for each task*

This step involved: i) refining the definition, wording and ordering of the tasks so that the tasks were presented in a clearly understandable order and that each task on the final list was a single task which could be clearly identified on a video as a distinct task, and ii) developing assessment criteria for deciding, on viewing a video, if a task had been undertaken.

The exercise was carried out by iteratively developing and piloting different versions of the list and criteria for assessment. This was undertaken by myself in conjunction with study supervisors. The first version is shown in appendix 6.1 (page 378) and listed nine tasks (tasks 8 and 10 in box 6.1 were represented as the single task of eliciting expectations of the consultation) and was piloted for clarity and feasibility on the six demonstration videos (videos of the model OA consultation recorded for simulator training and demonstration purposes, i.e. the videos of myself and the six simulators<sup>dd</sup>). Following this exercise three tasks were subdivided as they were found to be composite tasks: in practice they were each undertaken and observable as two separate tasks. The tasks subdivided were those for:

- Explaining OA into: i) explaining prognosis and ii) explaining treatment

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<sup>dd</sup> See foot note aa chapter 5 page 179.

- Promoting self-care for OA into: i) promoting exercise and physical activity and ii) promoting weight loss
- Providing self-care support for OA into: i) offering the OA guidebook and ii) offering the OA clinic

A second version of the list was developed with these separate tasks listed in a revised order so that all tasks concerning “asking” came first, followed by those for “advising” and finally those for “managing ” (appendix 6.2 page 379). In addition a column for recording when the task was first observed was added. Following further piloting and discussion, a third version was developed (appendix 6.3 page 380) in which the tasks were referred to as “outcomes” to be achieved by the GP. They could either be achieved by the GP initiating the task or by the GP responding to information volunteered by the “patient”. In this version the task of “addressing expectations” was divided into the tasks of: i) responding to specific expectations and ii) advising about or prescribing for pain relief.

Further piloting and discussion produced a final set of 14 consultation tasks, and their criteria for assessment, which could be practically assessed on a video and which were included in the measurement instrument (table 6.2). Refinements for the final set were that: i) the order was changed back to the original order with tasks grouped under the key elements of the model OA consultations, and ii) eliciting what the patient had tried or was trying was split into two tasks: that for pain and that for problems other than for pain. The tasks addressed key elements of the consultation - giving the diagnosis, explaining the diagnosis, addressing expectations, providing analgesia, promoting self-management and providing self-management support.

Giving the diagnosis	
1.1	The GP elicits the patient's ideas or worries or concerns about what they think is the matter with them, or the cause of their problem
1.2	The GP tells the patient the problem is due to OA, the word osteoarthritis needs to be used
Explaining the diagnosis	
2.1	The GP elicits what the patient knows or understands about OA, the word osteoarthritis needs to be used
2.2	The GP tells the patient that OA does not always / inevitably get worse, the word osteoarthritis does NOT need to be used
2.3	The GP tells the patient that OA is treatable: that there are things which can be done to help, the word osteoarthritis does NOT need to be used
Addressing expectations	
3.1	The GP elicits the specific expectation(s) the patient has of the GP about the problem
3.2	The GP responds to the patient's specific expectations (as noted at 3.1)
Providing analgesia	
4.1	The GP elicits what the patient has tried or is trying for the problem
4.2	The GP advises about, or prescribes for, pain relief
Promoting self-management	
5.1	The GP elicits what the patient has tried or is trying for the problem, other than for the pain
5.2	The GP tells the patient that exercise(s) or physical activity is beneficial for patients with OA or for the patient's problem
5.3	The GP tells the patient that losing weight, or not being overweight, is beneficial for patients with OA or for the patient's problem
Promoting self-management support	
6.1	The GP offers, or gives, the patient general written information on OA
6.2	The GP offers, or gives, the patient an appointment with a practice nurse to help with OA

Table 6.2 Assessment criteria for consultation tasks included in the measurement instrument

## **6.5.5 Criterion validity exercise**

### **6.5.5.1 Objective**

To assess criterion validity of the use of a rating tool developed to assess videos

### **6.5.5.2 Introduction**

Criterion validity of the use of a measurement instrument can be assessed by comparing ratings obtained from its use by those who are going to use it, with standard ratings. A gold standard has been defined as “the true state of the construct of interest” <sup>212</sup>, and requires the gold standard to be a completely valid assessment. Such assessments are seldom self-evidently completely valid and often rely on the opinion of experts in the field, <sup>212</sup> and for this reason will be referred to in the thesis as “standards” and not “gold standards”. The construct of interest for this exercise was assessment of delivery of the model OA consultation in the videos. Expert opinion was needed to determine standard ratings of its delivery.

### **6.5.5.3 Methods**

The exercise was undertaken in six steps:

1. Development of a rating tool: rating sheet and instructions for use
2. Development of standard ratings for a set of videos by the panel of experts
3. Training of assessors to use the measurement instrument for rating videos
4. Rating of the set of videos by assessors
5. Comparison of assessors’ ratings with the standard ratings.
6. Feedback of comparisons to assessors and further training

### *Step 1 Development of the rating tool*

A draft rating sheet, which included the tasks and criteria set out in table 6.2, and space to record the assessment, was piloted for usability on two of the demonstration videos by CM, PC, KD and myself, and refined to improve use. The phrasing of the criteria was revised to improve clarity and understanding, and an option to record that the patient had volunteered information, for example about what they were trying for the problem, was added. The final rating sheet is shown in appendix 6.4 page 381.

The final rating tool comprised the final rating sheet (appendix 6.4 page 381) and instructions for assessors (appendix 6.5 page 382) and was used in this exercise.<sup>ee</sup> The instruction sheet requested assessors, while watching the video, to record on the rating sheet the point at which tasks were initiated (time elapsed on video), record if the GP returned to any tasks, and record any comments they had about the tasks rated to have been undertaken. Assessors were instructed that they could review the video if there were any uncertainties, and were finally requested to record for each task if they assessed the task to have been undertaken or not undertaken. This final record – task undertaken or not undertaken - was the sole assessment used in rating the videos and determining the GP competency score and task delivery score.

### *Step 2 - Development of standard ratings*

An expert panel was formed of CM, PC, KD and myself to develop the standard ratings. The panel had developed expertise in the use of the rating tool by way of their involvement in its development and in the PhD study in general. Standard ratings were developed by the expert panel from appraisal of five videos randomly selected from the videos to be assessed in the video study. The selection was stratified so that the five videos included: a video of a GP

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<sup>ee</sup> The final rating tool was also the version of the rating tool used in the video study.

from each of the four intervention arm practices, videos undertaken before and after the workshops, and for one GP a pair of videos (one before and one after the workshops). The members of the expert panel individually and independently rated each of videos, blinded to time-point apart from myself, using the rating tool to record whether each of the 14 tasks was or was not present on each of the five videos. The panel met to compare ratings, and for each video identified disagreement in ratings. The panel members re-watched the videos, this time together as a group, and final standard ratings were agreed by discussion.

### *Step 3 - Assessor training*

Four GPs, not previously involved with or participating in the MOSAICS study, were recruited as assessors to rate the videos, and attended a two-hour training session led by myself. The MOSAICS trial, details of the workshops, and methodology for undertaking the videos were briefly presented. The four GPs were taken through the use of the rating tool (appendices 6.4 and 6.5 pages 381 and 382) in detail. They then independently rated two demonstration videos of the model OA consultation for which standard ratings had been developed.<sup>ff</sup>

Assessors' ratings were compared with the standard ratings for the two demonstration videos,<sup>gg</sup> and the assessors received individual feedback on their ratings. The feedback focused on their assessment of tasks for which their rating differed from standard rating, and there was discussion about how they had applied the criteria compared with how the criteria had been applied in the standard rating. The aim was, through discussion, to achieve a consistent approach by the assessors to rating videos.

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<sup>ff</sup> See footnote aa chapter 5 page 179

<sup>gg</sup> Standard ratings for these two demonstration videos had been developed by the expert panel prior to the assessor training, using the same methodology used for developing standard ratings described in “*Step 2 – Development of Standard Ratings*” above.



*Steps 4, 5 and 6 – Assessor rating a set of videos, comparison with standard ratings and feedback of comparison and further training*

Once the training in step 3 was completed, the assessors were asked to individually rate the five randomly selected “video study” videos for which there were standard ratings (step 4). The videos were presented to the assessors for rating in random order blinded to time-point. For each assessor a two by two table was constructed of their rating of the 14 tasks in the five videos, 70 tasks in total, and compared with the standard ratings (step 5). Percentage agreement, sensitivity and specificity, compared with the standard scores, were calculated for each assessor<sup>212</sup>. Their results were fed back to them, discrepancies discussed and further training given (step 6) on the assessment of tasks, for which there had been demonstrable discrepancy, and about deciding when these were, or were not, present on the videos.

#### **6.5.5.4 Results**

*Comparison of assessors’ ratings with standard ratings (step 5)*

The two by two tables for assessors versus standard ratings (from step 5, described above) are shown in tables 6.3 – 6.6, and percentage agreement, sensitivity and specificity for all the assessors in table 6.7

		<b>Standard rating</b>		<b>Totals for assessor</b>
		Task present	Task absent	
<b>Assessor</b>	Task present	45	9	54
	Task absent	1	15	16
<b>Totals for Standard rating</b>		46	24	70

Table 6.3 Comparison of assessor 1 ratings with standard ratings

		<b>Standard rating</b>		<b>Totals for assessor</b>
		Task present	Task absent	
<b>Assessor</b>	Task present	41	6	47
	Task absent	5	18	23
<b>Totals for Standard rating</b>		46	24	70

Table 6.4 Comparison of assessor 2 ratings with standard ratings

		<b>Standard rating</b>		<b>Totals for assessor</b>
		Task present	Task absent	
<b>Assessor</b>	Task present	39	4	43
	Task absent	7	20	27
<b>Totals for Standard ratings</b>		46	24	70

Table 6.5 Comparison of assessor 3 ratings with standard ratings

		<b>Standard rating</b>		<b>Totals for assessor</b>
		Task present	Task absent	
<b>Assessor</b>	Task present	45	13	58
	Task absent	1	11	12
<b>Totals for Standard rating</b>		46	24	70

Table 6.6 Comparison of assessor 4 ratings with standard ratings

Measure	Assessor			
	1	2	3	4
Percentage agreement (%)	86	84	84	80
Sensitivity (%)	98	89	85	98
Specificity (%)	63	75	83	46

Table 6.7 Percentage agreement, sensitivity and specificity of assessor ratings compared with standard ratings

The percentage agreement was high for all assessors, with their assessments agreeing with the standard rating for over 80% of the 70 tasks assessed in this exercise. Sensitivity (proportion of tasks assessed present if standard rating assessed present) was also high and ranged from 85% to 98%. Specificity (proportion assessed absent if standard rating assessed absent) was lower and more variable and ranged from 46% to 83%.

#### *Feedback and further training (step 6)*

Assessors' individual results were fed back to each assessor, and criteria for assessing that a task was present were discussed for tasks where there was disagreement between the assessor and standard rating. A threshold in line with that used in the standard assessments was agreed for these tasks. In the majority of cases disagreement arose because the assessor had rated the task as present when the standard assessment had rated it as absent, and the discussion centred on what needed to be heard and/or observed on the video for the criterion to be met and the task assessed as present.

## **6.5.6 Inter-observer reliability exercise**

### **6.5.6.1 Objective**

To assess inter-observer reliability of the use of the rating tool

### **6.5.6.2 Introduction**

Reliable use of a measurement instrument is, in the context of this study, demonstrated when two or more assessors using the rating tool to assess the same video achieve the same result. To assess reliability, the more pairs of ratings from different people assessing the same video the better.<sup>212, 213</sup> In this study the assessors as practising GPs had limited time available to undertake video assessments and data for inter-observer reliability came from their assessments of the five videos used for the criterion validity exercise described above. This limited the data available for undertaking inter-observer reliability testing: for each of the 14 tasks there were data from five comparisons, (the five videos), between the four assessors. This number of comparisons is lower than recommended when undertaking statistical testing of reliability using Kappa testing,<sup>212</sup> and statistical advice was sought on how to undertake reliability testing with the available data.

It was advised that an analysis could be undertaken on inter-observer reliability in ranking the videos by GP competency scores. This had merit in that the GP competency score was the principal measure to be used to evaluate change in GP competency. A test of how reliable assessors were in producing similar rankings for the same video would be helpful in testing the inter-observer reliability of the rating tool. The analysis investigated whether the assessors ranked, by GP competency score, the videos in a similar manner: i.e. whether they could differentiate good from poor GP competency reliably between themselves. The five videos were of four different GPs from different practices, and were for videos both before and after the workshops. Of the two videos taken from the same GP, one was recorded before the workshops and one after. From this it was postulated that the videos would demonstrate a broad range in GP competency and be an appropriate set of videos to use in an exercise to rank on the basis of GP competency.

To test agreement among multiple judges on ranking ordinal data the Kendall coefficient of concordance is recommended <sup>211</sup>. The test compares the rankings observed for the four assessors with the rankings which would have been obtained if there was perfect agreement. When rankings are tied each observation is given the average of the ranks the observations would have received if they had not been tied. <sup>211</sup> Possible values range from 1 (perfect agreement) to 0 (no agreement), and statistical software (see footnote bb page 193) was used to calculate the coefficient.

#### **6.5.6.3 Methods**

An inter-observer ranking analysis was undertaken on the assessment of the five videos to determine if the assessors ranked the videos in the same order as each other for GP competency score and how their rankings compared with the rankings derived from the standard ratings. The GP competency scores for each assessor for each video were calculated. For each assessor a ranking of “1” was given to the video with the lowest GP competency score and so on up to a ranking of “5” for the video with the highest GP competency score. When the rankings of videos were tied, the mean rank was determined. Kendall’s coefficient of concordance <sup>211</sup> was used to compare the rankings of the four assessors.

#### **6.5.6.4 Results**

The GP competency scores and the assessors’ rankings of the five videos are shown in table 6.8.

Video	Assessor 1		Assessor 2		Assessor 3		Assessor 4		Standard	
	GP score	Ranking	GP score	Ranking	GP score	Ranking	GP score	Ranking	GP score	Ranking
A	11	3	9	3	10	1= (2)	8	2	9	3
B	13	5	9	3	14	4= (4.5)	9	3= (3.5)	11	4
C	9	1= (1.5)	9	3	10	1= (2)	9	3= (3.5)	8	2
D	9	1= (1.5)	7	1	10	1= (2)	6	1	6	1
E	12	4	13	5	14	4= (4.5)	11	5	12	5

Table 6.8 GP competency score (denoted GP score in table) and ranking of videos A to E by assessor and the standard as produced by the expert panel

Kendall's coefficient of concordance test applied to the rankings by the four assessors was 0.79 ( $p < 0.01$ ), indicating that there was good inter-observer reliability in ranking the videos by GP competency score.

A comparison of the order in which the videos were ranked by the standard rating with that by the assessors is shown in table 6.9.

Video	Standard rating rank	Assessor 1	Assessor 2	Assessor 3	Assessor 4
D	1	1=	1	1=	1
C	2	1=	3=	1=	3=
A	3	3	3=	1=	2
B	4	5	3=	4=	3=
E	5	4	5	4=	5

Table 6.9 Videos ordered by standard rating rank by assessor ranking

From the table it can be seen that the order in which the videos were ranked by the assessors closely matched the order from the standard rating. For assessors 2 and 3 the ranking is in

sequence with the rating standard, and for assessors 1 and 4 the ranking of one video is out of sequence.

## **6.6 Discussion**

### **6.6.1 Summary of methods and findings**

The method selected for assessment of videos in the video study minimised against measurement error by presenting the videos for assessment in random order, blinding assessors to time-point of video, and using one assessor to rate all the videos of an individual GP. The validity and reliability of the measurement instrument were investigated. The content validity exercise established that the instrument included all the assessable model OA consultation tasks. The criterion validity exercise showed that the four assessors, having been trained, could satisfactorily identify tasks which were assessed as present by the standard rating from an expert panel (sensitivity was high for all assessors), but identifying the absence of tasks was less satisfactory against the standard (specificity was variable and was low for assessors 1 and 4). Feedback and further training followed this. The inter-observer reliability exercise showed that there was good agreement, with a Kendall's coefficient of 0.79, amongst the assessors on their ranking of the videos based on GP competency score. This final analysis demonstrated that, in relative terms, there was good agreement on discriminating between videos with high GP competency scores and those with lower ones.

Two summary measures were developed for use in the video study: i) GP competency score (GP competence in delivery of the model OA consultation) and ii) task delivery score (overall delivery of a specific consultation task). The choice of a statistical approach, which utilised paired data to evaluate change in these measures, would enable within-GP

differences to be used as the basis of analysis and remove the issue of between-GP variability. This mirrored the methodological approach for the video study, which focussed on minimising measurement error of within GP differences by using the same assessor to assess all the videos of an individual GP.

### **6.6.2 Strengths and limitations of methods and measurement instrument**

The critical reflection in the thesis is whether the selected assessment method, measurement instrument development, assessor training and testing, allowed for the true measurement of change in GP competency in the video study. The strengths and weakness of the approach taken are discussed below.

First, the assessment method for the video study was a strength, since the possibility of measurement error from inter-observer variability was eliminated with the use of single assessors to provide paired data on individual GPs. This strength was utilised in the choice of statistical tests which were based on the analysis of paired data.

Second, the measurement instrument was a valid measure of GP competency. GP competency was defined as the delivery of the tasks of the model OA consultations as promoted and rehearsed in the workshops, and all the key tasks bar “making the diagnosis” were included in the measure. Omitting “making the diagnosis” did limit the scope of GP competency measured to that of managing OA in the consultation after the diagnosis had been made. However, managing patients with diagnosed OA is known to be sub-optimal (see chapter 1 section 1.6 page 27) and so an important aspect of GP competency to measure in its own right.



Third, the assessors' measurement of GP competency was valid, but there was a risk that they would over-estimate the degree of model OA consultation delivery – resulting in tasks being “falsely” rated as present by the assessors (i.e. low specificity, especially for two of the assessors) - and hence an inflation of GP competency scores. This was addressed in the feedback of individual results and further training of all of the assessors. Detailed discussion took place on the threshold for presence. To note, “false positive” ratings were confined to 28 of the 70 individual assessments and to eight of the 14 tasks (raw data and descriptive analysis shown in appendix 6.6 page 383). Assessors often disagreed with the standard in similar ways: in two instances all the assessors disagreed with the standard, and in three instances three out of four disagreed. The reasons for disagreement were generally similar amongst assessors, for example the reason for disagreement on criterion 6.2 in one video was that all assessors judged it to have been met as the GP had offered a nurse appointment to help with weight (but not to generally help with OA as the criterion states). The feedback and further training of the assessors sought to address this. Ideally the assessors would have repeated the criterion validity exercise once again, but limited time precluded this.

Fourth, the assessors' measurement of GP competency was reliable, albeit from limited data on ranking of videos. GPs did reliably rank videos in a similar manner. The limitation of this assessment of inter-observer reliability was that it was performed on assessments undertaken before feedback and further training, and was limited to a ranking assessment on GP competency score. Reliability might have altered after further training, and this exercise did not investigate inter-observer reliability of absolute values of GP competency scores.

The conclusion is that the various validation and reliability experiments described above have provided evidence that the instrument and methods used comprise a valid and reliable

measure of GP competency. However there were two limitations, namely that assessors might over-estimate GP competency scores and that full inter-observer reliability of the absolute GP competency scores was not established. These limitations must be balanced against the strengths of the video study methodology, notably using one assessor to assess in random order blinded to time-point all the videos of an individual GP which means that the difference in scores by the same assessor can be used to measure GP competency rather than a comparison of absolute values produced by different assessors.

The final issue to reflect on was the measurement of change in task delivery score. To recap, this score was based on the number of videos at a given time-point in which a given task was assessed as undertaken, and the aim was to evaluate the impact of the workshop on overall delivery of individual tasks by all the GPs. The score at a given time-point is derived from the ratings of all the assessors - each assessor rated a proportion of the videos at each time-point – and different assessors could have applied different thresholds for deciding if the task had been undertaken. This might be a potential weakness, resulting in an error in measuring the absolute task delivery score for a given time-point. However first, the inter-observer reliability exercise established that error from inter-observer variability was unlikely to have been great. And second, it was the change in the task delivery score which was the subject of interest. Changes in the components of this – change in an individual GP's delivery of a task - were determined from two assessments by the same assessor. Again issues relating to measurement error discussed above become less troublesome because differences were determined from assessments by the same assessor.

### **6.6.3 Implications for use of the measurement instrument**

The measurement instrument was specifically developed for this PhD study and its validity in this context and its possibly limited inter-observer reliability have been discussed above.

Further research would need to be undertaken to establish the general reliability of the use of the measure, and more detailed inter-observer reliability, by assessors who have been more extensively trained, for it to be used to assess OA consultation competency by others in other contexts.

## **6.7 Conclusion and link to next chapter**

In conclusion, a measurement instrument with established content validity was developed and, although absolute values of summary scores may be overestimated by the group of assessors trained for the video study, there was reasonable, if not fully explored, between-observer reliability. The strengths of using within-observer assessments of change, and employment of statistical methods to investigate change based on analysis of paired observations, have been discussed. As such the approach adopted here, for the measurement of change in clinical practice, appears valid and reliable for the purposes of the experiment to be undertaken in the video study.

Chapters 5 and 6 have described the methods and measures to evaluate the impact of the workshops on clinical practice, the next step was to run the workshops as envisaged, and described, in chapter 4. The next chapter reports on the delivery of the workshops and an evaluation of that delivery.

## **7 DELIVERY OF THE BEHAVIOUR CHANGE INTERVENTION WORKSHOPS**

### **7.1 Introduction**

In chapter 4 the proposed content of the workshops, the behaviour change techniques to be utilised and a detailed workshop programme were presented. This chapter is descriptive and its aim is to summarise the actual process and activity involved in delivering the workshops in sufficient detail for them, like more traditional components of research studies, to be generalizable and implementable by others, and to provide a structure which enables evaluation of the extent to which the workshops achieved what they set out to achieve.

To meet these aims, the chapter is organised to present the extent to which the workshops were delivered against five parameters, that:

1. The necessary workshops were organised and undertaken
2. The GPs working in the practices attended the workshops
3. The proposed content was covered in the workshops
4. The proposed techniques were used in the workshops
5. The workshops adopted an adult learning approach

The evidence sources used to measure workshop delivery against these parameters are: a report entitled “MOSAICS GP Training Report” compiled in the three months after the workshops were delivered (appendix 7.1 page 384), presentations used in workshops (appendices 7.2 and 7.3 pages 385 and 386) and field notes made by the trainers during the delivery of the workshops (see appendices 7.1, 7.4 and 7.5 pages 384, 387 and 389).

The workshops were delivered in the four intervention practices participating in the MOSAICS trial, which are referred to as practices A, B, C and D. Table 7.1 gives a brief description of each practice.

	<b>Practice A</b>	<b>Practice B</b>	<b>Practice C</b>	<b>Practice D</b>
<b>Number of GPs</b>	2	7	20	2
<b>Number of registered patients</b>	4103	6968	23885	5515
<b>Location</b>	Mixed urban / rural area on outskirts of large city	Urban area within large city	Urban area within small market town	Urban area on outskirts of large city
<b>Teaching practice (medical students and/or GP registrars)</b>	Yes	Yes	Yes	No

Table 7.1 Details of the four intervention practices participating in the MOSAICS trial

## 7.2 Were the necessary workshops organised and undertaken?

The timings and venues of the workshops needed to be agreed with the practices so that as many of the GPs at each practice could attend as possible. Detailed discussions were undertaken during November 2011 with all four practices to arrange dates for the workshops. A schedule of dates was agreed with the practices (table 7.2) so that:

- Workshop 1 was undertaken once in each practice during the early afternoon, with a protected learning time event being utilised for this in practice C
- Workshops 2 and 3 were each run: i) as combined workshops for practices A and B (GPs from both practices attending) to provide sufficient numbers for skills training sessions (only two GPs in practice A), ii) twice in practice C (an afternoon workshop followed the same day by an evening workshop) to enable as many GPs as possible to attend, and

iii) once at Keele University for practices C and D (Keele is equidistant between the two practices) to give GPs from practice C an alternative date and to provide sufficient numbers for skills training for practice D (two GPs)

- Workshop 4 was undertaken once in each practice at a lunchtime

	Workshop 1	Workshop 2	Workshop 3	Workshop 4
<b>Practice A</b>	11 <sup>th</sup> January (1-3)			21 <sup>st</sup> February (12.30-1.30)
	-----	19 <sup>th</sup> January (1.30-4) @ practice A	9 <sup>th</sup> February (1.30-4) @ practice A	-----
<b>Practice B</b>	10 <sup>th</sup> January (12-2.30)			24 <sup>th</sup> February (1.30-2.30)
	-----			-----
<b>Practice C</b>	1 <sup>st</sup> February (1.30-4)	20 <sup>th</sup> February (2-4.30 and 5-7.30)	19 <sup>th</sup> March (2-4.30 and 5-7.30)	1 <sup>st</sup> May (1-2.30)
	-----	-----	-----	-----
<b>Practice D</b>	22 <sup>nd</sup> February (12.30-3)	1 <sup>st</sup> March (2-4.30) @ Keele Uni.	14 <sup>th</sup> March (2-4.30) @ Keele Uni.	30 <sup>th</sup> March (12-1)

Table 7.2 Workshop schedule in 2012 (workshops undertaken at individual practice unless stated otherwise)

In addition to the workshops a pre-workshop meeting was arranged in each of the four practices to inform them that they had been randomised to the intervention arm of the study and to inform them about the details of the workshops. The pre-workshops meetings for practices A and B were arranged for first week in December 2011, for practice C for the 16<sup>th</sup> and 18<sup>th</sup> January 2012 and for practice D for 3<sup>rd</sup> February 2012.

All the workshops were delivered as stated in the schedule, except that there was no take-up by GPs from practice C to join with GPs from practice D for workshops 2 and 3 at Keele University. However, two GPs who had newly started at practice B did attend these

workshops, resulting in sufficient numbers of GPs attending to make them viable for skills training.

### 7.3 Did the GPs working in the practices attend the workshops?

A record of attendance of GPs was kept at each workshop (table 7.3).

	Number (%) GPs who attended workshop			
	Practice A (n=2)	Practice B (n=7)	Practice C (n=20)	Practice D (n=2)
<b>Workshop 1</b>	2 (100)	5 (71)	13 (65)	2 (100)
<b>Workshop 2</b>	2 (100)	6 (86)	14 (70)	2 (100)
<b>Workshop 3</b>	2 (100)	5 (71)	15 (75)	2 (100)
<b>Workshop 4</b>	2 (100)	3 (43)	6 (30)	2 (100)

Table 7.3 Workshop attendance by practice

All the GPs from practices A and D attended all the workshops with more variable attendance from the larger practices. Reason for non-attendance at practice B included a GP going on maternity leave and a GP in training leaving the practice. However, three of the five GP partners at practice B did attend all of the two-hour workshops (workshops 1, 2 and 3).

There were a large number of GPs working in practice C with the inherent difficulty of getting them all in the same place at the same time, hence the reason workshops 2 and 3 were each run twice. Several of the GPs were GPs in training and left the practice while the workshops were being delivered. However, ten GPs at practice C did attend all of workshops 1 and 2 and 3. Overall attendance by all the GPs from the four practices for all the workshops was 68%: 77% attendance at workshops 1, 2 and 3 and 42% attendance at workshop 4.

Seventeen of the GPs attended all three of the principal workshops (workshops 1, 2 and 3) (defined as “fully trained”) and seven attended two of these workshops (“partially trained”).

## 7.4 Was the proposed content covered in the workshops?

In the development of the workshops, content was proposed for the seven Theoretical Domain Framework (TDF) domains which were identified (table 7.4 and see chapter 4 table 4.1 page 133)

<b>TDF domain</b>	<b>Behaviour change intervention content</b>
Knowledge	Burden / prognosis / pathophysiology of OA, experience of patients with OA of general practice NICE OA guidance, efficacy OA treatments Rationale for making the diagnosis of OA clinically and for giving the diagnosis Rationale for self-care of OA, support for self-care and patient centre consulting OA Guidebook and the model OA consultation
Skills	Assessing ideas / concerns and expectations / treatment preferences Making a clinical diagnosis of OA Giving the diagnosis / explaining OA and its treatment (use of language) Use of NICE recommended treatments Promoting OA Guidebook and nurse follow-up appointment
Social/professional role and identity	Attitudes to guidelines and NICE OA guidance Attitudes to support for self-care (potential conflict between professional care and self-care)
Beliefs about capabilities	Time to do it Other priorities in consultation Discussion about problems with managing OA / what would help to better manage it
Beliefs about consequences	Discussion on beliefs about consequences of OA interventions and model OA consultation
Motivation and goals	Presentation of MOSAIC study payments Provision of practice nurse training and a lifestyle change intervention
Memory attention and decision processes	Model OA Consultation Aide Memoire

Table 7.4 Proposed workshop content by Theoretical Domain Framework (TDF) domain



### **7.4.1 Knowledge**

The content for knowledge to be covered in the workshops concerned the nature and management of OA with specific reference to the recommendations of the NICE 2008 OA Guideline and the model OA consultation (table 7.3). This was principally delivered through: i) a didactic presentation, ii) a question and answer session with a rheumatologist and iii) written material

Workshop 1 included a 30 minute presentation entitled an OA Update (appendix 7.3 page 386) which covered the following topics:

- The current understanding of the pathophysiology of OA (with emphasis that OA is not just about cartilage degradation but that it is a complex interplay between the (often excessive) forces acting on the joint and the repair processes in the joint, which affects all joint structures)
- The rationale for reliance on clinical rather than radiological diagnosis.
- Justification of the need to improve OA care (emphasising that OA is a highly prevalent condition which impacts on people's lives but is not being managed as well as it might be)
- That commonly held beliefs about the impact and course of OA are unnecessarily pessimistic: that the condition does not inevitably get worse and is treatable, and self-management support is likely to be of benefit.
- Details of the MOSAICS trial intervention, that it was: i) developed using the WISE framework ii) informed by the NICE 2008 OA Guideline recommendations, iii) incorporated the use of the OA Guidebook with enhanced GP and nurse consultations to support OA self-management and uptake of NICE core OA treatments

This talk was followed by a session on the details of the GP and nurse enhanced consultations during which the key elements of the model consultation (1. Make, give and explain the diagnosis, 2. Provide analgesia advice / prescription, 3. Promote and support self-management) were presented.

In workshop 3 there was a 40 minute session during which the GPs were given the opportunity to put questions, not confined to OA, to a rheumatologist with an interest in OA. In preparation for this session GPs were asked in workshop 1 what knowledge would help them better manage OA, and material was prepared for workshop 3 to cover topics suggested. Workshop 3 was delivered on three occasions (see table 7.1 for details) and the following topics were discussed at the three question and answer sessions:

- How to make a positive diagnosis of OA and of rheumatoid arthritis (covered in all three sessions)
- Diagnosis of polymyalgia rheumatic
- Use of x-rays in diagnosing OA
- Use of intra-articular steroid injections for OA
- Management of gout, chondrocalcinosis and shoulder pain
- When to refer for arthroscopy / arthroplasty and outcomes for arthroplasty (covered in all three sessions)
- Management of pain in elderly housebound patients
- What patients mean by wear and tear

Throughout the workshops written material was handed out to supplement didactic and interactive sessions. The materials used are listed below:

1. Quick reference guide to the NICE 2008 OA Guideline (appendix 7.6 page 391)
2. The Keele OA Guidebook (appendix 7.7 page 392)
3. Arthritis Research UK Autumn 2011 Hands On publication: Osteoarthritis: a modern approach to diagnosis and management. Porcheret M, Healey E, Dziedzic K, Corp N, Howells N, Birrell F (appendix 7.8 page 393)
4. What does “wear and tear” mean to the patient – a hand-out prepared from work undertaken at Keele University (personal communication Drew Moore) (appendix 7.9 page 394)
5. The “Have you got the S factor?” poster produce by Arthritis Research UK (appendix 7.10 page 395)
6. Editorial by Paul Dieppe: Who should have a joint replacement? A plea for more “phronesis”. Osteoarthritis and Cartilage 2011;19:145-146 (appendix 7.11 page 396)
7. Making the Diagnosis of Rheumatoid Arthritis. Adapted from online article by John Dickson, Peter Lanyon and Elspeth Wise Primary Care Rheumatology Society 2003 (appendix 7.12 page 397)
8. Patient Reported Outcome Measures (PROMS) for hip and knee arthroplasty (appendix 7.13 page 398)
9. OA as a repair process. Adapted from NICE 2008 Full OA Guideline (appendix 7.14 page 399)

The use of a didactic approach in workshop 1, an open format in workshop 3 and written material resulted in the delivery of the proposed knowledge content in a structured and comprehensive manner, and additionally addressed specific expressed OA knowledge needs of GPs attending the workshops, notably on OA diagnosis and arthroplasty.

### 7.4.2 Skills

The content proposed for the skills training sessions was rehearsal of, and receiving feedback on, the skills necessary for delivery of the model consultation, specifically: making a diagnosis of OA clinically; assessing ideas, concerns, consultation expectations and treatment preferences; giving and explaining the diagnosis with an emphasis on the language used (using the word “osteoarthritis” to distinguish OA from rheumatoid arthritis and as a prelude to offering an OA Guidebook entitled “A guide for people with osteoarthritis”, and explaining OA in terms of “wear and repair”); using and explaining NICE recommended treatments for OA and promoting the OA Guidebook and nurse OA clinic appointments.

Two skills training sessions were delivered for each practice, one in workshop 2 and one in workshop 3, each lasting about an hour and facilitated by VC an experienced communication skills teacher. The skills training sessions were linked to the video-recorded consultations undertaken by the GPs at their practices (box 7.1).

1. GPs undertake 1<sup>st</sup> video-recorded consultation with simulated patient at practice
2. Workshop 1: DVD of 1<sup>st</sup> video given to GPs and GPs asked to watch prior to workshop 2
3. Workshop 2: DVD of 1<sup>st</sup> video discussed and GPs rehearse model consultation with simulated patient
4. GPs undertake 2<sup>nd</sup> video-recorded consultation with simulated patient at practice, given DVD at time of recording and asked to watch it prior to workshop 3
5. Workshop 3: DVD of 2<sup>nd</sup> video discussed and GPs rehearse model consultation with simulated patient

Box 7.1 Temporal relationship between video-recorded consultations and workshops

The format for skills training in both workshops was the same: i) the GPs were asked to discuss as a group how they had got on delivering the model OA consultation with the simulated patient at the surgery, using the DVDs for reflection, ii) from the group discussion the aspects of the consultation which would be rehearsed in the skills session were agreed and formed the agenda for the skills session, iii) VC introduced the GPs to working with simulated patients, and iv) the skills session was undertaken.

The consultation skills rehearsed in the skills training sessions in the two workshops are shown in table 7.5.

	Workshop 2	Workshop 3
<b>GPs from practices A and B</b>	Giving and explaining the diagnosis, including asking about ideas and concerns and negotiating the need for an x-ray to make the diagnosis	Promoting self-management Offering the OA Guidebook and OA clinic
<b>GPs from practice C</b>	Giving and explaining the diagnosis Selling the guidebook and the clinic	Taking the history Negotiating / resisting referral for arthroplasty Selling the benefits of exercise
<b>GPs from practice B and D</b>	Taking the history Giving and explaining the diagnosis	Responding to a request for arthroplasty Suggesting options other than surgery Explaining OA

Table 7.5 Consultations skills rehearsed in the skills training sessions by practices and by workshops

The content of the skills training sessions was determined by the GPs at the session and in none of the sessions was the proposed content worked through in a pre-determined manner; rather the content reflected what the GPs wanted to rehearse. However, none of the content covered was outside that proposed. Although the GPs were able to reflect on the

consultations they had undertaken with the simulated patients, very few had watched the DVDs to facilitate this. For some it was for technical reasons that they could not get the DVDs to play and for some that they seemed reluctant to view themselves consulting or had not found the time to do it. Interestingly, although most of the GPs did not watch their DVD, many of them stated that they would have liked individual feedback from the workshop facilitators on their DVDs, suggesting that a more structured approach may have facilitated the GPs viewing their DVDs.

The scenario for the simulated patient in workshop 3 was of a patient who wanted a referral for a knee replacement, and this to a large extent affected the content of two of the sessions. The GPs were challenged on how to respond to this request, when the aim was to manage the patient in line with the model OA consultation, and focused the session on trying different ways of explaining the pros and cons of arthroplasty and negotiating a referral to the OA clinic.

### **7.4.3 Social/professional role and identity**

The proposed content for this domain was attitudes of GPs to the use of guidelines to inform clinical practice, specifically the NICE OA Guideline, and to providing support for self-management. It had been identified during the development of the workshops that some GPs had a negative attitude to NICE guidance, and it was postulated that this might influence their desire to deliver a model consultation based on the NICE OA Guideline. A potential conflict between providing traditional professional care (a biomedical approach of the expert GP simply giving advice and direction to the patient) and providing support for self-management (a biopsychosocial approach with the GP and patient acting in partnership to

agree an agenda and care plan) had been identified in the intervention development as a barrier to the delivery of a consultation with the aim of supporting self-management.

This content was delivered in the workshops by the facilitators presenting a very positive attitude to the NICE OA Guideline and support for self-management, and being prepared to further this in discussion. The positive attitude was not challenged by the GPs during the workshops and no discussion was needed to encourage a positive attitude in the GPs.

#### **7.4.4 Beliefs about capabilities**

The content for this domain was to address three issues: i) that the GPs might believe that they did not have the time to deliver the model consultation, ii) that other problems raised in the consultation would take priority over delivering the model consultation, and iii) that the GPs might believe they are not very good at managing OA and would need help in better managing it.

The issue of time was addressed by emphasising the benefit of the nurse-led OA clinic: that the practice would have additional resources to manage OA, and that the GP would not have to address all aspects of supporting self-management of OA when delivering the model consultation. The scope of the model consultation was also emphasised: that it consisted of the three key elements which were to enhance, and not replace, current consultations with patients with OA.

GPs' capability in delivering the model consultation in the face of other problems raised in the consultation was addressed in the skills training sessions in both workshops 2 and 3. In workshop 2 the focus was on how best to respond to a patient request for an x-ray of the

affected joint, and in workshop 3 how best to respond to a request for referral for arthroplasty. In both workshops, GPs practised negotiating whether an x-ray or a referral should be organised in a manner which still enabled the GP to deliver the model OA consultation. For example, in one workshop it was concluded, after several failed attempts at negotiating with the simulated patient that an x-ray was not necessary, that at times an x-ray is needed for the patient to accept an OA diagnosis for the problem.

Eliciting and addressing GPs' learning needs for managing OA was undertaken in workshops 1 and 3. In the pre-workshop meetings GPs were asked to bring case histories to workshop 1 of patients with joint pain / OA who illustrated: care that had gone well, problems with diagnosis, problems with treating pain, problems with referral and complex management.

In workshop 1 GPs were asked to present the case histories in order to prompt identification of learning needs for OA management. No case histories were brought to workshop 1 by any of the GPs, but GPs were able to identify aspects of OA management they would like help with. These aspects were recorded on a flip chart and GPs informed that we would return to them in workshop 3. The list of aspects identified by the GPs was used to prepare written material and the agenda for the knowledge update session in workshop 3.

In workshop 3 in the question and answer session, GPs were encouraged to ask the rheumatologist about any aspect of OA management or about musculoskeletal problems in general. Additionally previously identified aspects were introduced into this session, discussion facilitated and the pre-prepared written material handed out.



### **7.4.5 Beliefs about consequences**

The proposed content for this domain was to elicit GP beliefs about the beneficial consequences for patients of OA interventions and the model OA consultation, and if needed to present evidence of effectiveness of OA interventions and rationale for benefit of the model consultation. It had been identified in the development of the workshops that some GPs were unaware of the evidence of effectiveness of OA interventions recommended in the NICE 2008 OA Guideline, and that GPs may need to be persuaded of the benefit of the model consultation.

That the OA interventions recommended in the NICE OA guidance are of known efficacy was presented in the OA Update session in workshop 1, and GP opinion about this was sought. None of the GPs expressed a belief that they were not beneficial and no discussion about their beneficial consequences for patients took place. Likewise the approach presented for the model OA consultation was not challenged by any of the GPs and no discussion took place on its beneficial consequences.

### **7.4.6 Motivation and goals**

The proposed content to address the motivation and goals domain was that the GPs were presented with, and aware of, the details of payments to the practice for participating in the MOSAICS study (for example reimbursement for lost clinical time in attending the workshops and for additional time needed for completing the OA computer template (see chapter 1 section 1.7 page 35), and of the study provision of training for practice nurses and the OA clinic. It had been postulated that the financial incentives for participating in the study, the nurse training and the provision of an additional practice service, underpinned by

the contractual arrangements for the study between the study team and the practice, would motivate the GPs to deliver their part of the trial intervention – the model OA consultation.

The details of financial and contractual arrangements were not included in the workshops as they had been fully presented to all practices when the study team first visited the practices to gain participation in the study. The nurse training and provision of an OA clinic in intervention arm practices was also presented at this first visit but was also included in the workshops. The details of the content and timing of the nurse training and the OA clinic were presented in workshop 1.

#### **7.4.7 Memory attention and decision processes**

The content for this domain was the production of an aide memoire for the model consultation. A first version of the aide-memoire (appendix 7.15 page 400) was presented to GPs in workshop 1 with the intention that, in subsequent workshops, the GPs and facilitators would discuss and modify the aide memoire to produce a final version for use by the GPs in day-to-day practice when delivering the model consultation.

Although discussion sessions for collectively developing the aide memoire were scheduled for workshops 2 and 3, they did not occur during the delivery of these workshops with any of the practices due to time pressures in undertaking the skills training sessions. The aide memoire was revised to produce a final version (appendix 7.16 page 402) by mid February 2012, a laminated version of which was handed out to GPs during workshop 4 (practices A and B in February) and workshop 3 (practices C and D in March).

The final version of the aide memoire differed from the first version in two respects:

1. The detailed list of consultation tasks was replaced by two boxes, one with the three key elements of the model consultation and one prompting the GP to ask about ideas, concerns and expectations
2. The key features of the OA clinic were presented on the reverse of the aide memoire (requested by GPs as a prompt in explaining the logistics and purpose of the OA clinic to patients)

## 7.5 Were the proposed techniques used in the workshops?

The proposed techniques to be used in the workshops are shown in table 7.6.

TDF domain	Techniques for behaviour change chosen to address domain
Knowledge	Information provision to address gaps in knowledge about: <ul style="list-style-type: none"> <li>• The nature and management of OA</li> <li>• NICE OA recommendations</li> <li>• The model OA consultation</li> </ul>
Skills	Rehearsal of relevant skills; graded task starting with easy tasks,; increasing skills: problem-solving to: <ul style="list-style-type: none"> <li>• Enhance GP consultation skills for OA</li> </ul>
Social/professional role and identity	Social processes of encouragement, pressure and support to: <ul style="list-style-type: none"> <li>• Engender a positive approach to guideline implementation and support for self-care</li> </ul>
Beliefs about capabilities	Social processes of encouragement, pressure, support to: <ul style="list-style-type: none"> <li>• Enhance perceived ability to deliver the model OA consultation</li> </ul>
Beliefs about consequences	Information provision; persuasive communication to: <ul style="list-style-type: none"> <li>• Counter perceived lack of efficacy of interventions for OA</li> </ul>

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<b>TDF domain</b>	<b>Techniques for behaviour change chosen to address domain</b>
Motivation and goals	Contract; rewards; persuasive communication to: <ul style="list-style-type: none"> <li>• Sign GPs up to delivering the model OA consultation</li> </ul>
Memory attention and decision processes	Prompts, triggers, cues to: <ul style="list-style-type: none"> <li>• Prompt delivery of model OA consultation in day-to-day practice</li> </ul>

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Table 7.6 Proposed techniques for workshops by TDF domain (taken from chapter 4 table 4.2 page 135)

Utilisation of the techniques in the workshops was as follows:

- Information provision in workshop 1 in the OA Update session and in workshop 3 in the Knowledge Update session
- Rehearsal of relevant skills - a graded task starting with easy tasks, and increasing skills through problem-solving in the skills training sessions in workshops 2 and 3
- Social processes of encouragement, pressure, support throughout the workshops in the interactive sessions
- Persuasive communication in delivery of the workshops by facilitators in their role of opinion leaders
- Contracts and rewards (not as part of the workshops) were integral to practices participating in the MOSAICS study
- Prompts, triggers and cues with the development and dissemination of the aide memoire

## **7.6 Did the workshops adopt an adult learning approach?**

The proposed delivery of the workshops using an adult learning approach is set out in chapter 4 (see section 4.5.3.3 page 138) and in summary was that:

- GPs would be given opportunities to share knowledge and experience of OA management
- GPs would be asked to bring, present and discuss case histories of recent patients with OA
- GPs own learning needs would inform the question and answer session in workshop 3
- GPs would set the agenda for the skills training sessions: the skills to be practised during the session
- The facilitators would be viewed by the GPs as partners: both having relevant knowledge and experience

In the delivery of the workshops the GPs were able to share their knowledge and experience in the OA mapping session in workshop 1 (when this was specifically sought), and during the skills training sessions (when GPs tried out ways of consulting which they had used in day-to-day practice or which they personally proposed). Although GPs did not bring and present prepared case histories, they did state what in their experience had been problematic in the management of OA. Finally, with GPs setting the agenda in skills training sessions, their own learning needs in this area were addressed.

## **7.7 Summary, conclusion and link to next chapter**

The purpose of this chapter was to describe the delivery of the workshops and five parameters were identified as criteria against which to measure delivery of the workshops.

First, as can be seen, significant practical challenges had to be overcome in order to achieve the successful delivery of all the workshops as intended. This involved preparatory meetings,

complex issues of timetabling, extensive communications and preliminary visits by members of the research team before the workshops could be timetabled and delivered.

Second, as previously stated, much effort was made to deliver the workshops at times deemed suitable for the GPs. This included evening sessions at considerable distances from Keele University. It proved impossible to “capture” all of the GPs from some practices for every session, but 17 GPs did attend all the principal workshops, resulting in all practices having a sizeable cadre of trained GPs. Unpredictable practice demands (such as over-running clinics) and sickness cover and holidays were significant difficulties besetting attendance. Given that the team was GP led and the trainers gave top priority to the workshops over a six month period, it seems unlikely that a higher participation rate could have been achieved.

Third concerning content, considerable time and effort was required to effect delivery of the workshop programme to ensure all the TDF domains, such as knowledge, skills, beliefs about consequences, were addressed. The review of content delivery presented in section 7.4 above provides evidence to support the view that the workshops did cover all the topics which were intended. The actual training timetable and programme content is shown in appendix 7.17 page 403.

Fourth regarding techniques, the multidisciplinary background of the team, in general practice, rheumatology and psychologically-oriented pain management, facilitated a comprehensive approach to delivery of the knowledge component of intervention. Similarly, in the matter of skills training delivery, there was a wide range of experience, among members of the team, of a range of teaching methods, including didactic transmission of

content, small-group problem-solving and experiential learning during simulated consultations (including both actual participation and peer-observation). Facilitators were able to persuade, and provide encouragement and support, throughout the workshops during the many interactive sessions, and given the peer learning approach adopted. The issue of use of incentives was addressed in terms of provision of funding for participation in the study, both in terms of payment for attending the workshops and funding of GP and nurse time to deliver the trial intervention. Finally a specific aide-memoire was developed during the workshops in the form of a laminated sheet, and distributed to all GPs for use in day-to-day practice.

Fifth, specific effort was made to adopt an adult learning approach and GPs were able to share their experience and expertise of managing OA during the skills training sessions and the workshops did specifically address the GPs' learning needs in the session with the rheumatologist and during the skills sessions.

In conclusion this chapter has described how the workshops were delivered against five parameters for successful delivery, and has provided evidence to contend that the workshops were delivered as intended and that they did achieve what they set out to achieve.

Having demonstrated that the workshops were successfully delivered, the next step is to present their impact using the methods and measures presented in chapter 5 and 6. Chapter 8 presents the results of the evaluation of the impact of the behaviour change intervention delivered in the workshops.

## 8 RESULTS

### 8.1 Introduction

Chapters 5 and 6 described the methods and measures to evaluate the impact of the workshops. This chapter reports on the results of these evaluations:

#### GP LEVEL

- Direct observation, before and after workshops, of :
  1. Clinical practice observed in consultations with simulated patients
- Self-report measures, before and after workshops, for:
  2. Self-report usual practice for OA
  3. Self-report uptake of NICE OA recommendations
  4. Self-report status of determinants of change
- After workshop evaluation of:
  5. Learner reactions in GPs who attended workshops

#### PRACTICE LEVEL

- i. Audit in day-to-day practice of:
  6. Delivery of model OA consultation

The timings of the six evaluations are shown in figure 8.1



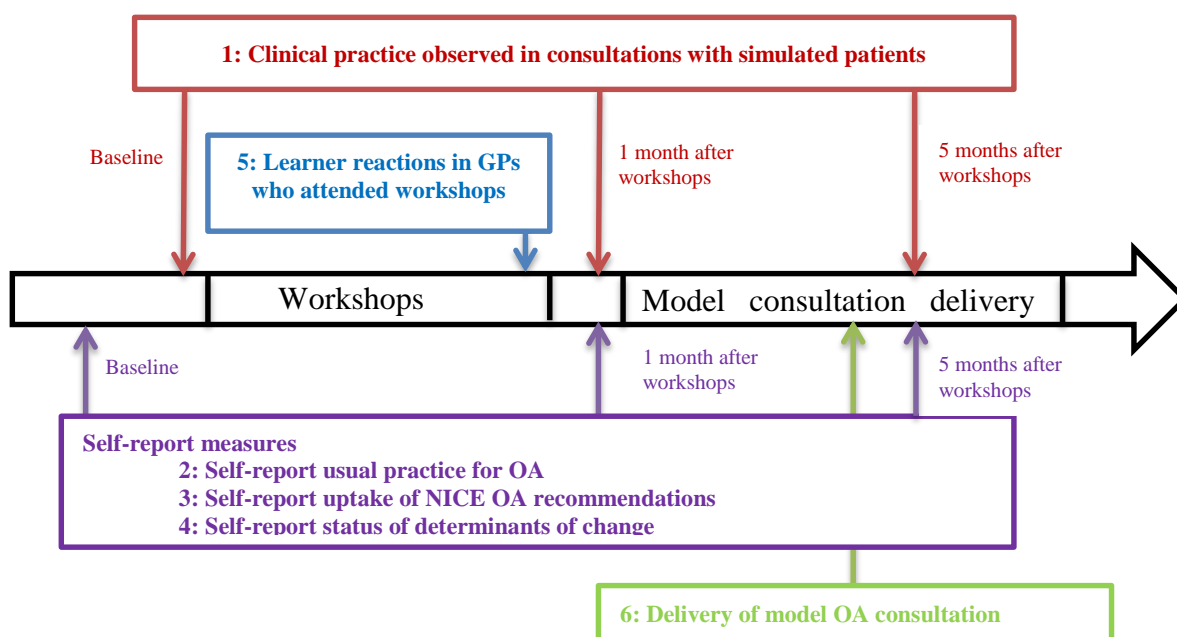


Figure 8.1 Timings of six evaluations (numbered) in relation to delivery of workshops and model OA consultation

## 8.2 Evaluation 1: Clinical practice observed in consultations with simulated patients (the video study)

To recap on the methods, GPs in the intervention arm practices were invited to undertake video-recorded consultations with simulated patients (videos) before the workshops and at one month and five months after the workshops. The videos were assessed for the presence of 14 model OA consultation tasks and scores calculated for: i) delivery by an individual GP of the 14 model OA consultation tasks (GP competency score) and ii) delivery of an individual task by the GPs as a whole (task delivery score). This section reports on: i) the number of GPs with videos, ii) the numbers of videos assessed and the workshop attendance of the GPs whose videos were assessed, iii) the duration of the assessed videos, iv) the GP competency scores, v) the task delivery scores, vi) an analysis of the use of the word “osteoarthritis” in giving the diagnosis. For brevity this evaluation is henceforth referred to as the “video study”.

### **8.2.1 Number of GPs with videos**

Videos were recorded at least once by 25 GPs in the four practices (appendix 8.1 supplementary table 8.1 page 404). In practices A and D all the GPs (two in each practice) were video-recorded, in practice B five of the seven GPs were recorded and in practice C 16 of the 20 GPs were recorded.

### **8.2.2 Number of video-recorded consultations assessed and number of workshops attended**

Sixteen GPs had a video at each time-point, but one video for one GP cut off after four minutes and this GP's videos were excluded from the assessment. The 15 GPs with a full set of videos – 45 videos in total - were included in the assessment. For practices A and D this included all the GPs in those practices (two GPs for each practice), for practice B two of the seven GPs in the practice and for practice C nine of the 20 GPs in the practice.

Of the 15 GPs whose videos were assessed 12 GPs had attended all of workshops 1, 2 and 3 (fully trained), two GPs had attended two out of three of workshops 1, 2 and 3 (partially trained) and one GP had attended none of these workshops (not trained). The two GPs partially trained and the GP not trained were all from practice C.

### **8.2.3 Duration of assessed videos by GP and time-point**

To report on the duration of the videos, and evaluate if there was a change in duration after the workshops compared with before, duration of videos was determined from the video file digital data. The distribution of duration of videos is shown in figure 8.2. The mean duration of all the videos was 14.46 minutes and the median duration of all the videos was 13.75

minutes. Given that the mean and median were of very similar value, and given the shape of the distribution plot, the duration of the videos was deemed to be normally distributed.

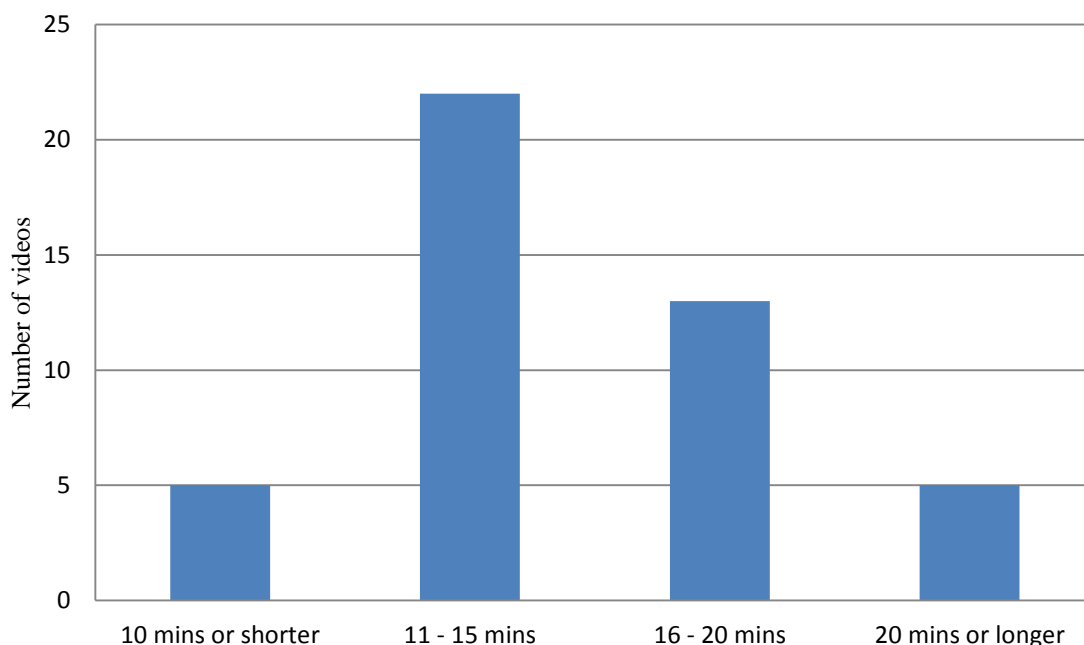


Figure 8.2 Distribution of duration of all 45 video-recorded consultations

The duration of each of the 45 videos, mean duration (and standard deviation), and range at each time-point are shown in appendix 8.1 supplementary table 8.2 (page 405). The mean duration of the videos was 14.64 minutes at baseline, 13.56 minutes at one month after and 15.17 minutes at five months after the workshops. There was no difference in the duration of videos at the three time-points (paired t-test comparing duration at three time-points: baseline v 1 month,  $p = 0.28$ ; baseline v 5 months,  $p = 0.63$ ; 1 month v 5 months,  $p = 0.13$ ). The duration of videos varied widely between individual GPs: five videos were 10 minutes or shorter, five videos were 20 minutes or longer (figure 8.2).

### 8.2.4 GP competency score

The GP competency measured the extent to which a GP had undertaken the 14 model OA consultation tasks: the quantitative measure of clinical practice for model OA consultation delivery by an individual GP. It was defined as the number of consultation tasks assessed as present in an individual GP's video. The maximum score was 14, if all tasks assessed as present in the video. The GP competency scores at the three time-points for the 15 GPs whose videos were assessed were calculated (see supplementary table 8.3 appendix 8.1 page 406). Summary statistics for GP competency score are shown in table 8.1.

	Baseline	1 month after workshops	5 months after workshops
<b>Median</b>	7	11	11
<b>Interquartile range</b>	5 – 9	10 – 12	10 – 11
<b>Range</b>	5 – 11	8 – 14	7 – 13

Table 8.1 - Summary statistics for GP competency score by time-point

The GP competency score was significantly increased from baseline at both one month and five months after workshops: Wilcoxon signed-rank test comparing GP competency score: 1 month after workshops with baseline,  $p = 0.001$ ; 5 months after workshops with baseline,  $p = 0.001$ .

### 8.2.5 Task delivery score

The task delivery score measured the extent to which an individual task was delivered by all the GPs: the quantitative measure of clinical practice for individual tasks delivery by all the GPs. It was defined as the number of videos, at a given time-point, in which an individual consultation task was assessed as present. At each time-point the maximum possible task

delivery score was 15 if the task was assessed as present in all 15 videos for that time-point. Table 8.2 shows, for each task, the task delivery score for each time-point and the p values for McNemar test comparing 1 month and 5 months after workshops against baseline for each task.

Consultation task	Task delivery score			Change in task delivery scores, p values from McNemar test	
	Base line	1 month after	5 months after	1 month v baseline	5 months v baseline
Eliciting ideas about problem	11	11	8	0.62	0.45
Giving the diagnosis of OA, using the word “osteoarthritis”	10	6	9	0.22	1.00
Eliciting understanding of OA	1	2	4	1.00	0.37
Explaining that OA does not get inevitably worse	4	13	14	0.01	0.01
Explaining that OA treatable	9	15	14	0.04	0.13
Eliciting expectations of the consultation	6	14	11	0.01	0.13
Addressing expectations	6	13	11	0.02	0.13
Eliciting what the patient is trying for pain	15	15	14	.*	1.00
Advising or prescribing analgesia	15	14	15	1.00	.*
Eliciting what the patient is trying for the problem other analgesia	6	9	3	0.51	0.45
Advising that exercise beneficial	12	15	15	0.25	0.25
Advising that weight loss beneficial	10	6	11	0.13	1.00
Offering general written info	4	14	14	0.004	0.004
Offering a nurse appointment to help with the problem	0	15	15	0.000	0.000

\* McNemar Test not computable

Table 8.2 Task score by consultation task by time-point and comparison of 1 month and 5 months after with baseline.

Tasks broadly divided into three groups: i) those which were delivered by most, if not all, GPs before workshops, ii) those whose delivery was significantly increased after workshops, and iii) other tasks whose delivery was not significantly different after workshops:

- i. The tasks of: a) eliciting what the patient is trying for analgesia and b) advising on analgesia were undertaken by all GPs at baseline and continued to be undertaken by all, or nearly all, GPs after workshops. The task of advising that exercise is beneficial was undertaken by 12 GPs at baseline and all GPs after workshops
- ii. The delivery of six tasks increased significantly at one month after the workshops:
  1. Explaining the OA does not inevitably get worse
  2. Explaining that OA is treatable
  3. Eliciting expectations of the consultation
  4. Addressing expectations
  5. Offering written information
  6. Offering the nurse appointment.

The delivery of three of these tasks (2, 5 and 6 above) continued to be significantly increased at five months after workshops.

- iii. The delivery of five tasks was either: i) low at baseline and remained low after workshops (eliciting understanding of OA, and eliciting what, other than pain killers, was being tried) or ii) was moderate at baseline and did not significantly alter after workshops (eliciting ideas about the problem, giving the diagnosis using the word “osteoarthritis”, and advising that weight loss was beneficial)

In summary, nine of the 14 tasks either had high levels of delivery at baseline, which continued after workshops, or had improved delivery after workshops. And the delivery of the remaining five tasks was variable and not altered by workshops.

### **8.2.6 The use of the word “osteoarthritis”**

A key focus of the skills training sessions in the workshops was use of the word “osteoarthritis” when giving the diagnosis: to distinguish OA from rheumatoid arthritis and as a prelude to offering a guidebook entitled “A guide for people who have osteoarthritis”. The finding that fewer GPs, though not significantly fewer, had undertaken the task of giving the diagnosis of OA using the word “osteoarthritis” at 1 month after workshops compared with baseline was unexpected. An analysis of the individual GP change in the delivery of this task was undertaken (appendix 8.1 supplementary table 8.4 page 407). In summary, five GPs delivered the task in all their videos, and four did not deliver it any video. One GP started to deliver it after workshops and two GPs stopped after workshops. And three GPs did not deliver it at 1 month, but did at baseline and 5 months.

A further assessment of the videos was undertaken to investigate whether non-delivery of the task was a consequence of: i) the GP not giving the diagnosis in the video or ii) the GP giving the diagnosis but using an alternative word or phrase to osteoarthritis. Non-delivery of the task was found in 20 of the 45 videos. These 20 videos were viewed and an assessment was made on: i) whether the diagnosis was given and ii) if so what words or phrases were actually used. In 16 of the 20 videos the diagnosis was assessed as given and in 15 of these the word “arthritis” was used to give the diagnosis. Other additional words or phrases used were “wear and tear” and “degeneration” (appendix 8.1 supplementary table 8.5 page 408).

## **8.3 Evaluation 2: self-report usual practice for OA**

Self-report of usual practice for OA was elicited in a vignette questionnaire survey (see chapter 5 section 5.3.1.2 page 160 and appendix 5.1 page 358). Baseline questionnaires were mailed to all GPs participating in the MOSAICS study. Follow-up questionnaires, at one month and five to six months after workshops were mailed to GPs who: i) responded to baseline questionnaire, ii) consented to further contact and iii) worked in an intervention arm practice. This section reports on; i) questionnaire mailing and response, ii) GP personal characteristics, iii) self-report of usual practice for the patient presented in the vignette.

### **8.3.1 Questionnaire mailing and response**

Baseline questionnaire was mailed on 8<sup>th</sup> November 2011 to the 46 GPs participating in the study, 24 of whom were GPs working in an intervention arm practice. Intervention arm response to baseline questionnaire, follow-up mailings and responses are shown in table 8.3. The overall response by intervention arm GPs to the baseline questionnaire was 83%, response to follow-up questionnaires was 47% at one month and 44% at five months.



	Number of GPs mailed and number GPs (% mailed) who responded					
	Baseline		1 month after training		5 months after training	
	Mailed	Responded	Mailed	Responded	Mailed	Responded
<b>Practice A</b>	2	2 (100)	2	1 (50)	2	1 (50)
<b>Practice B</b>	5	3 (60)	3	1 (33)	2 <sup>1</sup>	1 (50)
<b>Practice C</b>	15	13 (87)	12 <sup>1</sup>	5 (42)	12	4 (33)
<b>Practice D</b>	2	2 (100)	2	2 (100)	2	2 (100)
<b>All GPs in intervention arm</b>	24	20 (83)	19 <sup>1</sup>	9 (47)	18 <sup>1</sup>	8 (44)

1 GP left after previous mailing and not mailed

Table 8.3 Mailing and response to questionnaire survey by intervention arm practice and by all GPs in the intervention arm

### 8.3.2 GP personal characteristics

Personal characteristics of the GPs working in intervention arm practices are shown in table 8.4.

Personal characteristic	Number GPs (%) unless otherwise stated
Years qualified as doctor - mean	18.9
- range	9 - 38
Female	8 (40.0)
Working as a GP Partner <sup>1</sup>	13 (68.4)
Working as a salaried GP <sup>1</sup>	6 (31.6)
Musculoskeletal training undertaken since qualification	7 (35.0)
Hospital job in rheumatology or orthopaedics	10 (50.0)
Working as a musculoskeletal GP with a special interest	0 (0.0)
Personal history of a joint problem	9 (45.0)

1 – missing data for one GP

Table 8.4 Personal characteristics of GPs working in practices in the intervention arm of the MOSAICS Study (n=20)

### **8.3.3 Self-report usual practice for vignette patient**

The GPs were asked to consider the vignette (see chapter 5 box 5.3 page 173) and respond to the subsequent questions. Baseline data are presented for all intervention arm GPs (n=20), for “non-responders” (non-responders to follow-up questionnaire at one month (n=11)) and for “responders” (responders at one month (n=9)), and follow-up data presented for one and five months (appendix 8.1 supplementary table 8.6 page 409). A qualitative description is given of:

- Baseline data for all GPs at baseline
- Comparison of baseline data for “responders” with baseline data for “non-responders”
- Comparison of responses after workshops with baseline data for “responders”

#### **8.3.3.1 Grading of severity of the problem and initial management**

At baseline the majority of all GPs graded the symptoms as moderate (75%) and the degree of joint damage as mild (65%), with similar proportions at baseline for “responders” and “non-responders”. The proportions in the “responders” did not change to any great extent after workshops.

The most common investigation ordered at baseline was a knee x-ray (by 55% of all GPs and 67% of “responders”) but its use was markedly reduced in the nine “responders” (six GPs at baseline, none at one month and one at five months). The use of NICE core treatments at baseline was variable: all or almost all GPs would give education and verbal advice, would treat with strengthening exercise and weight loss; but fewer would give written information and advise increased activity. This was a pattern at baseline seen in both the “responders” and the “non-responders”. The use of these core treatments did not alter markedly after

workshops with the exception of the provision of written information for which anticipated use increased in “responders”, from four GPs at baseline to nine at one month. Other recommended treatments were used by similar proportions of GPs after workshops compared with baseline except topical nonsteroidal anti-inflammatory preparations for which anticipated use increased in “responders” from four GPs at baseline to eight at one month. All responses are shown in appendix 8.1 supplementary table 8.6 page 409

### 8.3.3.2 Giving and describing the diagnosis, and describing prognosis

GPs were invited to briefly describe: i) what diagnosis they would give, ii) how they would describe the diagnosis, and iii) what prognosis they would give. A typology for classifying free text responses for each question was developed (table 8.5 and appendix 8.2 page 435 for full details of development of typology).

Categories for question 1	Categories for question 2	Categories for questions 3
<p>The diagnosis is given as:</p> <ol style="list-style-type: none"> <li>1. OA or osteoarthritis</li> <li>2. Arthritis (unspecified or other than OA)</li> <li>3. A symptom based diagnosis (knee pain / arthralgia)</li> <li>4. In descriptive terms (early degenerative changes / meniscal damage, wear and tear).</li> </ol>	<p>A description focusing on:</p> <ol style="list-style-type: none"> <li>1. Negative statements (including “wear and tear” or “degeneration”)</li> <li>2. Positive statements (including “repair”, “improve”, “mend”, “respond” or those referring to control or treatment) on their own or to accompany or modify statements included in category “1”</li> <li>3. Symptoms and signs of the diagnosis (which can include mention of inflammation),</li> <li>4. X-ray findings</li> <li>5. Relationship of diagnosis to increasing age and ubiquity of diagnosis in older people</li> </ol>	<p>The response gives a:</p> <ol style="list-style-type: none"> <li>1. Good prognosis</li> <li>2. Good prognosis contingent on treatment</li> <li>3. Neutral / uncertain prognosis</li> <li>4. Neutral / uncertain prognosis mitigated by treatment</li> <li>5. Poor prognosis</li> <li>6. Poor prognosis mitigated by treatment</li> </ol>

Table 8.5 Typology for analysis free-test responses to questions on: 1) giving the diagnosis, 2) describing the diagnosis, and 3) describing prognosis.

All responses to the questions were allocated to one of the categories relevant to the question as described in chapter 5 (see section 5.3.6.1 page 169). The results for each question are presented below.

#### *Giving the diagnosis*

At baseline the responses of 14 of the 20 GPs were categorised as giving the diagnosis as “OA” or “osteoarthritis”, and the proportion of responses categorised as giving the diagnosis in this way increased after the workshops (all responses at one month, and seven of the eight responses at five months). Of the six responses at baseline which were not categorised in this way, two gave a symptom based diagnosis, two gave the diagnosis as arthritis and two used descriptive terms. All responses and categorised responses are listed in appendix 8.1 supplementary tables 8.7 and 8.7a pages 410 and 411.

#### *Describing the diagnosis*

At baseline, 15 of the 20 responses were categorised as negative statements, such as “wear and tear” when describing the diagnosis, and only one GP described the diagnosis in positive terms. Although such negative descriptions continued after the workshops, the proportion of responses categorised as positive statements increased: four out of the nine GPs at one month and five out of the eight GPs at five months. All responses and categorised responses are listed in appendix 8.1 supplementary tables 8.8 and 8.8a pages 412 - 414.

#### *Describing the prognosis*

The allocation of responses at each time point to the six categories for describing the diagnosis (see table 8.5 page 247) is shown in table 8.6.

Category	Number of responses (%) by time-point		
	Baseline (n=20)	One month (n=9)	Five months (n=8)
<b>1 - Good prognosis</b>	3 (15)	0	0
<b>2 - Good prognosis contingent on treatment</b>	6 (30)	6 (67)	4 (50)
<b>3 - Neutral / uncertain prognosis</b>	2 (10)	0	0
<b>4 - Neutral / uncertain prognosis mitigated by treatment</b>	3 (15)	0	2 (25)
<b>5 - Poor prognosis</b>	1 (5)	1 (11)	0
<b>6 - Poor prognosis mitigate by treatment</b>	5 (25)	2 (22)	2 (25)

Table 8.6 Number of free text responses on prognosis allocated to each category at baseline and one and five months after workshops

At each time-point the majority of responses included a statement both on prognosis and treatment (categories 2, 4 and 6), and the proportion categorised in this way increased after the workshops (14 out of 20 (70%) at baseline, 8 of 9 (89%) at one month and 8 of 8 (100%) at five months.

At baseline the most frequent descriptor was “good prognosis contingent on treatment” (6 responses (30%)) with the proportion of responses allocated to this descriptor increasing after the workshops (67% at one month and 50% at five months). The second most frequent descriptor was “poor prognosis mitigated by treatment” whose proportionate use did not alter after workshops (25% at baseline, 22% at one month and 25% at five months).

All responses and categorised responses are listed in appendix 8.1 supplementary tables 8.9 and 8.9a pages 416 - 417.

The findings reported above, which compared responses after the workshops with those before, need to be treated with caution and will be discussed in chapter 9. In brief the low response at follow-up limits the generalizability of these finding to all GPs who attended the workshops, and the number of GPs who reported they had changed practice was small.

### **8.4 Evaluation 3: self-report uptake of NICE OA recommendations**

GP uptake of NICE OA recommendation was elicited in the questionnaire survey (see chapter 5 section 5.3.2 page 162 and appendix 5.1 page 358) the response to which is described in section 8.3.1 above. This section reports on; i) awareness and credibility of the NICE 2008 OA Guideline, ii) awareness of, agreement with and adoption of recommendations on core treatments for OA. Responders were dichotomised – items 1 to 4 combined / item 5 – as planned (see chapter 5 section 5.3.6.2 page 171). For the core treatment recommendations this dichotomised responses into those who were fully aware of / were in full agreement with / had fully adopted the care recommended (item 5 response) and those who were not (item 1-4 responses).

Baseline data is presented for all GPs, and for “responders” and “non-responders” (as defined above in section 8.3.3 page 246). Before and after workshop comparisons were made using baseline “responder” data as the comparator to one and five month follow-up data. Qualitative descriptions of baseline data and change after workshops compared with baseline “responder” data are given.

#### **8.4.1 Guideline awareness and credibility**

None of the GPs had full awareness of the NICE OA Guideline, or felt it was fully credible, at baseline: none had heard or read “a lot” about the guideline, or felt “a lot” that it was a

credible source of guidance on OA. This appeared to change after the workshops for awareness but not for credibility, albeit the absolute increase for awareness was only in a small number of GPs (four GPs at one month and five GPs at five months). (appendix 8.1 supplementary table 8.10a page 418).

#### **8.4.2 Awareness of, agreement with, and adoption of core recommendations**

Core recommendations inquired about related to the provision of: i) self-management support for OA, ii) written information, iii) advice on exercise and physical activity and iv) advice on weight loss.

##### **8.4.2.1 Awareness of recommendations**

Full awareness at baseline in all GPs was very low for “self-management support” and “written information” (only one GP fully aware of the former and none of latter), and low for “exercise and physical activity” and “weight loss” (six and five GPs respectively). Full awareness was greater after the workshops compared with baseline in the nine GPs with follow-up data at one month, albeit absolute numbers were small, (“self-management” support (6 GPs at one month vs none at baseline), “written information” (3 vs none), “exercise and physical activity” (5 vs 3) and “weight loss” (7 vs 1)), For full details see appendix 8.1 supplementary tables 8.11a, 8.12a, 8.13a and 8.14a pages 420 - 426.

##### **8.4.2.2 Agreement with recommendations**

Full agreement at baseline in all GPs was low for all recommendations, ranging from two (10%) GPs in full agreement for “written information” to eight (40%) for “exercise and physical activity”. Full agreement was greater after the workshops compared with baseline in the nine GPs with follow-up data at one month, albeit absolute numbers were small, for

three recommendations (“self-management support” (6 GPs at one month vs 2 at baseline), “written information” (4 vs none) and for “weight loss” (6 vs 3)), but not for “exercise and physical activity” (5 vs 5). For full details see appendix 8.1 supplementary tables 8.11a, 8.12a, 8.13a and 8.14a pages 420 - 426.

#### **8.4.2.3 Adoption of recommendations**

Full adoption at baseline was low ranging from no GPs for “written information” to five (25%) GPs for both “exercise and physical activity” and “weight loss”. Full adoption was not appreciably greater after the workshops compared with baseline in the nine GPs with follow-up data at one month (“self-management” support (3 GPs at one month vs 1 at baseline), “written information” (1 vs none), “exercise and physical activity” (4 vs 3) and “weight loss” (5 vs 3). For full details see appendix 8.1 supplementary tables 8.11a, 8.12a, 8.13a and 8.14a pages 420 - 426.

The finding that there was greater awareness and agreement, but not adoption, after the workshops, as reported above, needs to be treated with caution (for reasons given in the previous section) and will be discussed in chapter 9.

### **8.5 Evaluation 4: self-report status of determinants of change**

The final section of the questionnaire posed questions based on the determinants of change identified in the development of the workshops (see chapter 4 table 4.1 page 133). The questions concerned the following:

- Knowledge about OA
- Whether it was part of a GP’s role to manage OA
- Priority given to OA management



- Time to manage OA in the consultation
- Confidence in various aspects of managing OA
- Consequences for patients of the NICE recommendations for core OA treatment (written information, exercise and physical activity, and weight loss advice)
- Emotional reaction to OA.

In addition, there was a series of questions on access to services for people with OA which were not hypothesised to change as a consequence of the workshops and were included to explore whether change in responses in the questionnaires administered after the workshops was due to social desirability.

Baseline data is presented for all GPs, and for “responders” and “non-responders” (as defined above in section 8.3.3 page 246). Before and after workshop comparisons are made using baseline “responder” data as the comparator to one and five month follow-up data. Qualitative descriptions of baseline data and change after workshops compared with baseline “responder” data are given.

### **8.5.1 Knowledge about OA**

At baseline only 21% or less of all GPs responded that they were “very well” informed about any of the aspects of OA knowledge asked about, a proportional response which was generally seen at baseline in the “non-responders” and “responders” groups. After the workshops higher proportions of GPs responded that they were very well informed about all the aspects of OA knowledge compared with baseline proportions in the “responders”, although absolute numbers of GPs who reported being better informed were small. For full details see appendix 8.1 supplementary table 8.15 page 427.

### **8.5.2 GP role to manage people with OA, OA as a priority and time to manage OA**

At baseline 40% of all GPs responded that they felt that managing people with OA had “a lot” to do with their job, as did a slightly higher proportion (56%) at baseline in the “responders”. And this did not alter appreciably after the workshops.

At baseline less than 20% of all GPs responded that managing patients with OA was a priority for them; a response which was not appreciably different after the workshops.

At baseline 10% of all GPs responded that they had plenty of time to manage OA as a single problem in the consultation and none that they had plenty of time to manage it in combination with other problems. The proportion who responded after the workshops that they had plenty of time to manage OA as a single condition increased slightly but did not increase for managing OA with other problems.

For full details see appendix 8.1 supplementary table 8.16 page 428-431.

### **8.5.3 Confidence in various aspects of managing OA**

At baseline the proportion of all GPs who responded that they were very confident in OA diagnosis, joint examination, prescribing, and supporting self-management was low (5%, 5%, 25%, 15% respectively) and increased after workshops at both one month and five months after (appendix 8.1 supplementary table 8.16 pages 428 and 429).

#### **8.5.4 Consequences for patients of the NICE recommendations for core OA treatment and emotional reaction to OA**

At baseline the proportion of all GPs who responded that the core treatments of OA information, exercise and physical activity, and weight loss would help patients a lot with their OA was low (15%, 16%, 32% respectively) and increased after workshops at both one month and five months after (appendix 8.1 supplementary table 8.16 pages 428 – 429).

There appeared to be no effect of the workshops on “heart-sink” reactions to patients (appendix 8.1 supplementary table 8.16 pages 428 - 431).

As hypothesised the workshops appeared to have no effect on perceived access to services for OA (appendix 8.1 supplementary table 8.16 pages 428 - 431).

The finding that there was an increase in knowledge, confidence, positive views on consequences for patients reported above needs to be treated with caution (again for reasons given above) and will be discussed in chapter 9.

#### **8.6 Evaluation 5: Learner reactions in GPs who attended workshops**

Satisfaction questionnaires were completed by 23 of the 24 GPs who attended workshop 3. They were asked their views on workshops 1, 2 and 3 and on their video-recorded OA consultations with simulated patients.

### 8.6.1 Quantitative responses

All the GPs expressed enthusiasm for the workshops, felt it would help them better manage OA and felt the workshops were proficiently delivered. All bar one would recommend the workshops to others and about three quarters felt it would help with other aspects of their practice. However, over 80% felt it covered ground they already knew (table 8.7).

Statement	Number (%) participants (n=23)			
	Strongly disagree	Disagree	Agree	Strongly agree
I enjoyed the training sessions			16 (70)	7 (30)
The training has helped me to better manage OA			14 (61)	9 (39)
The training covered a lot of ground I already knew		4 (17)	16 (70)	3 (13)
The training has helped with other aspects of my practice		6 (26)	13 (57)	4 (17)
The trainers were proficient in delivering the sessions			14 (61)	9 (39)
I would recommend these training sessions to a colleague		1 (4)	15 (65)	7 (30)

Table 8.7 - Participant ratings of the workshops and their delivery

When asked about the content of the workshops over 90% felt it was about right for knowledge about OA and how to manage OA in the consultation (table 8.8).

Statement	Number (%) participants (n=23)		
	Too little	About right	Too detailed
The content relating to OA knowledge was:		22 (96)	1 (4)
The content relating to managing OA in the consultation was:	1 (4)	21 (91)	1 (4)

Table 8.8 - Participant ratings of the content of the workshops

GPs were asked how confident they felt at the end of the workshops in tackling the various elements of the model consultation. Confidence was generally high in: diagnosing OA clinically, explaining OA, offering the OA Guidebook and promoting the OA clinic, but less so for promoting or affirming patients' self-management of OA (table 8.9).

How confident do you now feel about:	Number (%) participants (n=23)				
	Not confident		Somewhat confident		Very confident
	1	2	3	4	5
Diagnosing OA clinically			1 (4)	16 (70)	6 (26)
Explaining OA			4 (17)	12 (52)	7 (30)
Promoting or affirming self-management		1 (4)	6 (26)	9 (39)	7 (30)
Offering the OA Guidebook			4 (17)	8 (35)	11 (48)
Promoting the nurse-led OA clinic			3 (13)	10 (43)	10 (43)

Table 8.9 - Participants ratings of their confidence in delivering the elements of the model consultation

### 8.6.2 Open responses

GP responses to three of the questions which elicited free-text responses (box 8.1) were analysed.

- A. We would like to know which parts of the training you felt were most useful in getting you ready for delivering the new approach in the consultation?

B. Should we have included anything else?

C. Any other comments?

Box 8.1 Questions eliciting open responses in learner reaction questionnaire

#### **8.6.2.1 Question A – the most useful elements of the workshops for preparing GPs to deliver the model OA consultation**

There were 45 responses concerning the most useful elements of the workshops (some GPs commented on more than one element) and the responses referred to: skills training (22 responses, appendix 8.1 supplementary box 8.1 page 432), specific sessions (11 responses, appendix 8.1 supplementary box 8.2 page 433), aspects of the model consultation covered in the workshops (6 responses, appendix 8.1 supplementary box 8.3 page 433), and aspects of the MOSAICS trial intervention covered in the workshops (6 responses, appendix 8.1 supplementary box 8.3 page 433).

Overall the skills training was seen as the most useful element of the workshops for preparing to deliver the model OA consultation, with 22 of the 23 GPs who responded referring to them. Many of the responses (eight) indicated that the skills training was found to be useful without explaining why, but a significant number (seven) referred to one aspect of the training, namely the use of language and how best to explain OA to patients. (appendix 8.1 supplementary box 8.1 page 432).

Of other workshop sessions the question and answer session with the rheumatologist was seen as the most useful by five GPs, with other GPs indicating that other interactive sessions were most useful (appendix 8.1 supplementary box 8.2 page 433).

Some GPs (six) responded that the most useful element related to coverage of the approaches taken in the model consultation, such as diagnosing OA clinically and supporting self-management, and five GPs to the coverage of aspects of the trial intervention, such as the template and the OA Guidebook (appendix 8.1 supplementary box 8.3 page 433).

#### **8.6.2.2 Question B – what else should have been included in the workshops**

There were 16 responses to question B and six of the responses were that nothing additional was needed. Three referred to having individual feedback on the video recorded consultations and two on information on the content of the nurse-led OA clinic (appendix 8.1 supplementary box 8.4 page 434).

#### **8.6.2.3 Question C – any other comments**

There were only four responses to question C asking for other comments and three of these were general complimentary statements (appendix 8.1 supplementary box 8.5 page 434).

### **8.7 Evaluation 6: Implementation of the model OA consultation in day-to-day practice: an audit of delivery**

The practice nurses delivering the OA clinic asked patients attending the clinics the four questions to determine if the relevant criterion had been met (see chapter 5 table 5.2 page 169) and responses were recorded on the case report form. Case report forms were completed on 268 patients who attended the clinics. The recorded responses for questions on GP model OA consultation delivery are shown in table 8.10.

Consultation task	Number (%) responses (n=268)			
	Yes	No	Maybe	Missing data
<b>Did the GP ask you what you thought the problem was due to?</b>	126 (47.0)	115 (42.9)	8 (3.0)	19 (7.1)
<b>Did the GP tell you what they thought the problem was due to?</b>	183 (68.3)	59 (22.0)	7 (2.6)	19 (7.1)
<b>Did the GP explain to you what OA is?</b>	99 (36.9)	135 (50.4)	12 (4.5)	22 (8.2)
<b>Did the GP give you the OA Guidebook to read?</b>	228 (85.1)	13 (4.9)	0 (0)	27 (10.1)

Table 8.10 Patient report of GP model OA consultation delivery

The audit standard for delivery of each consultation task was 80% and only delivery of the OA Guidebook task (85.1%) met this standard.

## 8.8 Summary of results and link to next chapter

In summary the six evaluations of the workshops have shown that:

### GP LEVEL

1. Clinical practice observed in consultations with simulated patients (the video study)
  - GPs undertook more consultation tasks after workshops than before
  - Tasks concerning the management of pain and advising that exercise is beneficial were undertaken well at baseline, and continued to be after workshops
  - The six tasks of explaining that OA is treatable and does not get inevitably worse, of eliciting and addressing expectations, and of offering written information and a nurse appointment were undertaken more frequently after workshops than before



- The word “osteoarthritis” was not used more frequently in giving the diagnosis after workshops, with many GPs using the word “arthritis” instead
2. Self-report of usual practice for OA (findings to be viewed with caution due to low response to follow-up questionnaires)
    - A suggestion that there was increased intention to offer vignette patient written information and prescribe topical NSAIDs after workshops compared with before
    - A suggestion that there was increased intention to use “OA” or “osteoarthritis” in giving the diagnosis, and to offer vignette patient more positive OA explanations and advice on prognosis after workshops compare with before
  3. Self-report uptake of NICE OA recommendations (findings to be viewed with caution due to low response to follow-up questionnaires)
    - A suggestion that after the workshops, compared with before, GPs were more fully aware of the recommendations of the NICE 2008 OA Guideline, better fully agreed with the recommendations, but had not better fully adopted them
  4. Self-report status of determinants of change (findings to be viewed with caution due to low response to follow-up questionnaires)
    - A suggestion that after the workshops, compared with before, there was an increase in GP knowledge about OA
    - A suggestion that after the workshops, compared with before, there was increased GP confidence in managing OA and increased GP perception about the benefit for patients from the NICE OA recommendations

5. Learner reactions in GPs who attended workshops

- GPs were enthusiastic about the workshops, felt that attending them helped them to better manage OA and stated they would recommend them to others
- Skills training sessions were reported to be the most useful element of the workshops

PRACTICE LEVEL

6. Audit of delivery of model OA consultation

- The audit standard was only met for the task of giving the OA Guidebook with variable delivery of other consultation tasks audited

Chapter 9 presents an overview of the findings of the entire thesis and discusses:

- How well the original aim and objectives of the thesis were met
- The strengths and weakness of the methodologies used in the thesis
- How the findings in this thesis compare with those in recently published literature on the care of people with OA in general practice
- The clinical and research implications of the findings in the thesis

## **9 DISCUSSION**

### **9.1 Achievement of aim and objectives and key thesis findings**

The aim of the thesis was to develop a model OA consultation to guide GP clinical practice for the initial management of OA, and to implement the use of the model OA consultation by GPs. A consensus exercise enabled the content of a ten minute consultation, between a GP and an older person presenting with peripheral joint pain, to be agreed, and an implementation behaviour change intervention was developed and delivered. The intervention was subsequently shown to change GP clinical practice in consultations for OA. The details of these undertakings are discussed below.

#### **9.1.1 The content of the model OA consultation**

First, a consensus exercise with professional and lay participants developed the model OA consultation and the strengths and weakness of how this was undertaken are discussed in section 9.2.1 below. The consensus model OA consultation consisted of 25 tasks principally relating to: assessment, providing information about OA, promoting NICE core OA treatments and providing first-line analgesia if needed. This provided a comprehensive guide for the initial consultation between an older person presenting with a knee problem and a GP. However, it was only one element in the development of the model OA consultation in this thesis: this initial model was simplified, broadened and refined for use in the workshops. Simplification was undertaken to enable a “concrete proposal” for change to be developed, and presented the model OA consultation as three key tasks:

1. To make, give and explain the diagnosis
2. To provide analgesia advice / prescription
3. To promote and support self-management

The focus of the model OA consultation was broadened for use in the workshops to include older adults presenting with knee or hip problems, and was refined with incorporation of the “elicit/provide/elicit” model from Motivational Interviewing.<sup>214</sup> The resultant model OA consultation used in the workshops thus differed from that developed in the consensus exercise in terms of the detail of some of the tasks, but followed and expanded on the three key tasks.

The part of the model OA consultation which described the tasks to be undertaken after the diagnosis had been made was further refined when developing the criteria for assessing the consultations between GPs and simulated patients. This resulted in a version which precisely articulated criteria for the included tasks. This version could be regarded as the pragmatic application of the model OA consultation for use in clinical practice: based on the consensus model, developed to define and assess GP OA consultation behaviour in clinically applicable ways, and whose delivery by GPs has been determined in this thesis; all of these are practical attributes of a model for use in practice. Its potential future clinical use will be discussed in section 9.4.1 below.

### **9.1.2 Development of a behaviour change intervention to implement the model OA consultation**

From the review of the literature on changing clinical practice, as reported in chapter 2, it was concluded that an implementation approach, which was informed by relevant theories or models, should be utilised in attempts to change GP consultation behaviour for patients presenting with possible OA. The use of theory was achieved by the incorporation of the Implementation of Change Model,<sup>80</sup> the Theoretical Domains Framework<sup>105</sup> the model for

mapping behaviour change techniques to its domains, <sup>119</sup> and adult learning theory, into developing the workshops, as discussed in chapter 4 (see section 4.6.1 page 140).

This theory-driven approach was combined with the use of specific interventions of known effectiveness, for example the use of opinion leaders and context-bound communication skills training, <sup>100, 150</sup> and achieved the objective of developing a behaviour change intervention to implement the model OA consultation. Specifically the behaviour change intervention included behaviour change techniques which addressed the determinants of change identified as relevant to the delivery of the model OA consultation. The workshops to deliver the behaviour change intervention consisted of a mixture of interactive and didactic sessions, which incorporated the GPs' expertise and experience, addressed knowledge and skills gaps, and which were facilitated by opinion leaders who encouraged and supported the GPs in changing the way they conducted OA consultations.

In conclusion the objective to develop a behaviour change intervention using theory was achieved and resulted in the systematic development of a detailed programme for four workshops to deliver the behaviour change intervention.

### **9.1.3 Delivery of the behaviour change intervention workshops**

The delivery of the workshops has been presented as an audit against five parameters in chapter 7 and in summary: all necessary workshops were arranged, 24 of the 31 (77%) GPs in the intervention practices were "trained" (fully or partially trained by dint of attending three or two respectively of workshops 1, 2 and 3), the proposed content and techniques were used when the workshops were delivered, and an adult learning approach was taken. That only 77% of GPs were "trained" was in the main due to the difficulty in getting the 20 GPs

in practice C to attend at the same pre-arranged times, and despite organising two of the workshops to run twice it was only possible to get 14 (70%) of these GPs “trained”. In practices A and D all GPs were “trained” and in practice B six of the seven (86%) were “trained”. Further in practice C during the course of the MOSAICS trial there was a high turnover of GPs leading to a lower proportion of “trained” GPs in the practice for the duration of the trial. This does highlight the difficulty in delivering one-off training in a large practice, but with a large investment in time and people needed to deliver the workshops it would have been difficult to deliver another round of workshops. This does have implications for rolling out the training to a wider body of GPs and this will be discussed in section 9.4.1 below.

In conclusion the objective to deliver the behaviour change intervention to GPs participating in the MOSAICS trial was achieved for almost 80% of the GPs who were working in the practices when the workshops were undertaken and the workshops were delivered as planned.

#### **9.1.4 Impact of the workshops**

The first objective in evaluating the impact of the workshops was to select and develop the relevant methods and measures. The achievement of this objective was described in chapters 5 and 6, and resulted in six evaluations being systematically chosen (see chapter 5 table 5.1 page 154) and extensive testing of the validity and reliability of a measure to assess video-recorded OA consultations (see chapter 6). The impact of the workshops was evaluated principally by assessing change in clinical practice observed in the videos (the video study), with secondary evaluations from self-report data, learner reactions and an audit in day-to-

day practice. A summary of the findings from these evaluations and a discussion as to whether the evaluations were achieved as planned is presented below.

#### **9.1.4.1 Evaluation of impact of workshops on clinical practice observed in the videos (the video study)**

The key finding was that GPs' clinical practice for OA consultations was enhanced after the workshops in that they were observed to undertake significantly more consultation tasks after the workshops compared with before (median 11 tasks undertaken after compared with 7 before). The tasks which were undertaken significantly more often after the workshops were: explaining that OA does not inevitably get worse and that it is treatable; eliciting and addressing patient expectations of the consultation; and offering written information and a follow-up appointment with the nurse.

The workshops did not enhance clinical practice in giving the diagnosis of OA using the word "osteoarthritis", and further investigation revealed that this was because the word "arthritis" and not "osteoarthritis" was used in giving the diagnosis. The baseline evaluation identified that some aspects of the model OA consultation did not need to be enhanced: tasks concerning the management of pain and advising that exercise is beneficial were part of usual clinical practice for OA prior to the workshops, and continued to be after. Baseline clinical practice of the GPs participating in the MOSAICS trial in these areas may not be the same as that of GPs in general. Some of the GPs in the trial were self-selected, namely those who had taken the decision for their practice to participate in the trial, and some could have altered their clinical practice for OA prior to the workshops as a result of presentations by the study team (when "selling the study" and when setting up the study). However, the baseline self-report data suggest that the GPs in the study did, prior to the workshops, have

similar views and practice to GPs in general,<sup>9, 60, 206</sup> suggesting that the findings in the video study can be generalised to all GPs, an issue which will be returned to in section 9.2.3.1 below.

The evaluation of impact of workshops on clinical practice observed in the videos was achieved in that the clinical practice of 15 GPs was evaluated: all the GPs from two of the practices (two GPs in each), two GPs from practice B and nine from practice C. All but one of these GPs were “trained” and were thus appropriate GPs to be included in an evaluation of the impact of the workshops on clinical practice: i.e. those whose clinical practice could have been enhanced by the workshops.

Not all the GPs in practices B and C were included in the video study, as nine did not have a full set of videos, and those included might not have been typical of all GPs from these practices. The GPs who were included might have been more committed to the study, in that they undertook all the videos, and so may have been more motivated to enhance their clinical practice. However, two of the 11 GPs included from these practices were only “partially trained” and one not trained at all, suggesting that even among the included GPs there was a range of commitment to the study. Further, which GPs had a full set of videos for assessment was due to whether they were working in the practice on the days the videos were undertaken and not solely their commitment to the study: the MOSAICS trial nurse endeavoured to video all GPs who were present in the surgery at the time of the video sessions.

In conclusion, GPs whose clinical practice was evaluated were the appropriate GPs to include in the evaluation, and were likely to be representative of all GPs who attended the workshops. Among these GPs, clinical practice for OA was enhanced after the workshops



compared with before. Whether this was an impact of the workshops, given that the evaluation used a before and after design, will be discussed in section 9.2 below on the strengths and possible limitations of the methodologies used.

#### **9.1.4.2 Evaluation of impact of workshops with self-report measures**

##### *Self-report usual practice for OA*

The exploratory analysis of the vignette questionnaire suggested that GPs had an increased intention, after the workshops compared with before, to: offer written information about OA, prescribe topical NSAIDs, use “OA” or “osteoarthritis” in giving the diagnosis and give more positive advice about OA and its prognosis. The offer of written information and giving more positive advice accords with the findings on change in clinical practice for OA described above, in that the tasks of offering written information, and explaining that OA does not get inevitably worse and is treatable, were observed to occur in the videos more frequently after the workshops than before. The finding that after the workshops GPs almost universally intended to use the words “OA” or “osteoarthritis” in giving the diagnosis is at odds with the finding from the video study. That GPs often used “arthritis” in giving the diagnosis in videos recorded after the workshops merits further investigation and will be returned to in section 9.4.2 below on research implications.

##### *Self-report uptake of NICE OA Guideline recommendations*

The exploratory analysis of uptake of NICE OA Guideline recommendations suggested that GPs: i) were more fully aware of the core treatment recommendations of the NICE 2008 OA Guideline, and ii) better “fully agreed” with them (but had not “fully adopted” them), after the workshops compared with before. The recommendations included in the questionnaire were those relating to supporting patients with OA to self-manage their condition, providing

written information, advising on exercise and physical activity and advising if needed on weight loss. These recommendations underpin the model OA consultation and are operationalised in many of the specific tasks of the consultation. But without further analysis to assess associations between change in awareness and agreement and change in delivery of consultation tasks, which the limited data available in this study precludes, it is not possible to make any inference as to whether clinical practice was influenced by a change in the uptake of NICE OA recommendations.

#### *Self-report status of determinants of change*

The exploratory findings on the determinants of change suggested that in GPs there was an increase in knowledge about OA, an increase in confidence in managing OA and an increased perception that patients would benefit from NICE OA recommendations. However, without further analysis to assess associations with change in clinical practice observed in the videos, which is again precluded by limited data, it is not possible to make any inference as to whether change in clinical practice was influenced by a change in one or more of the determinants of change.

In conclusion, although an exploratory analysis was undertaken on the data available, the aim of assessing the impact of the workshops on self-report usual practice, self-report uptake of NICE OA recommendations and self-report status of determinants of change was not achieved in any meaningful way due to lack of follow-up data. The merit of the initial rationale for assessing workshop impact with these three methods, in light of the experience of undertaking them, is discussed below in section 9.2.3.2.

#### **9.1.4.3 Learner reactions**

The GPs evaluated the workshops positively by reporting that they: enjoyed the sessions, felt the trainers were proficient in delivering the training, would recommend (all except one GP) the training to others and felt the content of workshops was about right. At the end of the workshops the GPs reported that they were confident about diagnosing OA clinically, explaining OA, offering the OA Guidebook and promoting OA self-management and the nurse led clinic – tasks they would need to undertake in delivering the MOSAICS trial intervention. They reported that the skills training sessions were the most useful in preparing them to deliver the GP component of the trial intervention.

The positive impact of the workshops described in the above paragraph does not directly relate to its impact on changing clinical practice for OA, the principal aim of the workshop, but learner satisfaction is probably a necessary, although not sufficient, requirement of any educational or training activity.<sup>173</sup> It is therefore a positive finding of the study that learner satisfaction was reported for these workshops.

#### **9.1.4.4 Practice level audit of delivery in day-to-day practice**

This thesis took advantage of the opportunity to collect data from patients attending the nurse-led OA clinic, on their previous GP consultation, to undertake an audit of GP delivery of four tasks of the model OA consultation. Although it was not an audit of overall delivery in a practice of these four tasks in relevant consultations, as it only concerned those patients who had consulted the GP and were referred to the OA clinic, it did enable an audit of delivery in a proportion of GP OA consultations. Albeit consultations during which a referral to the OA clinic was made and thus during which model OA consultation tasks might have been expected to have been optimally delivered. On this basis it should be regarded as

presenting a best case scenario. Given this, it is to be noted that the delivery of only one task – offering the OA Guidebook – met the audit standard of being undertaken in 80% of relevant consultations.

In the video study the delivery of two tasks concerning OA explanations improved after the workshops but in this audit delivery of a related task (explaining what OA is) only occurred in 37% of consultations. This discrepancy could have been a consequence of a number of factors: i) “trained” GPs behave differently in day-to-day practice from that in a simulated setting, ii) some GPs referring to the OA clinic may not have been “trained”, or iii) that the audit task of “explaining what OA is” is not related to the tasks of “explaining that OA is not inevitably progressive and is treatable” assessed in the videos and thus a discrepancy might be expected.

In conclusion the audit was conducted as planned and has provided data on “best case scenario” delivery of four model OA consultation tasks and indicates that more work will need to be undertaken to fully implement or to better evaluate the model OA consultation in day-to-day practice. This issue will be returned to in section 9.4.1 (clinical implications) below.

## **9.2 Strengths and possible limitations of methods used**

This section discusses the strengths and possible limitations of the methods used in the thesis with the aim of deciding on the level of confidence which can be placed in the findings. Specifically it discusses how the methods addressed, or may have introduced, any possible biases which may have affected internal or external validity of the findings.

Internal validity refers to the accuracy of research findings <sup>175</sup>: are findings trustworthy or could they have been affected by systematic errors (biases) which could have resulted in findings being untrustworthy? External validity refers to the generalisability of research findings: <sup>175</sup> are findings applicable for use in other settings or with different groups of people?

This section discusses the consensus exercise methodology used in the development of the model OA consultation, the implementation methodology used in the development of the behaviour change interventions, and the methodologies used to evaluate the impact of the workshops.

### **9.2.1 Consensus exercise methodology**

An extensive review of consensus exercise methodology <sup>130</sup> addressed the question of “how can the validity of consensus judgements be determined?” and concluded that:

“Thus, for clinical guidelines there is no absolute means for judging at the time whether a decision is valid, and thus whether a particular method for producing consensus is valid. This leaves us with the problem of how to evaluate different consensus development methods. Our focus has been to look at the factors which are likely to influence the process of consensus development, and where possible how these factors might influence the outcome.”

The review provided a guide to good practice in guideline development and a number of its recommendations are relevant to the use of a Delphi consensus exercise in this thesis.

### **9.2.1.1 Internal validity**

In relation to internal validity the review <sup>130</sup> recommended that: i) homogeneous groups should be used if the aim is to identify areas of agreement, ii) group sizes of about 15 are “about right”, iii) two or more ratings rounds will allow for convergence of individual opinion, iv) arguments and reasons should be fed back as well as the distribution of individual responses, v) more demanding definitions of agreement are likely to lead to anodyne outcomes and v) actual procedures should be carefully recorded because specific consensus methods in practice are variable.

In this thesis two homogenous groups of about 15 individuals each undertook two rating rounds, conforming to the above recommendations. There was no feedback on why tasks should or should not be included (and this could have been included in the consensus questionnaire but was not considered at the time of its development) and the definition of agreement was demanding (90% of a group agreeing to include a task). However, the reasons for “setting the bar” at 90% were clearly documented, as was the method of combining the views of the two groups, conforming to the recommendation that actual procedures should be carefully recorded.

### **9.2.1.2 External validity**

In relation to external validity the consensus exercise review <sup>130</sup> states that the output of a consensus group may be more likely to be accepted if the group is seen as credible to the target audience, and that any output should be interpreted in light of the composition of the group. In this thesis there were two consensus groups (a GP group and a patient group) and the inclusion of a patient group should increase the credibility of the model OA consultation: as it was developed with both lay and professional views.

However, the GP group was composed of GPs with a special interest in musculoskeletal problems and for this reason the model OA consultation may not be seen as applicable to GPs in general. But, as argued in chapter 3 (section 3.5.3 page 114), GPs in general were deemed not to be the appropriate experts for this exercise as there is evidence to suggest that many GPs do not optimally consult for OA and that the appropriate experts were GPs who were interested in the management of OA in general practice.

In conclusion, having undertaken a formal consensus exercise in line with recommended best practice with both a specialist GP and a patient group, and fully documented how it was undertaken, it can be argued that the model OA consultation developed in the exercise is both internally and externally valid. And, although refined for use in the workshops, the model OA consultation developed in the consensus exercise can in its own right be regarded as likely to be both trustworthy and applicable to GPs and patients in general.

## **9.2.2 Methodology for developing the behaviour change intervention workshops**

### **9.2.2.1 Internal validity**

In relation to internal validity a systematic and theory driven approach to the development of the workshops (the first three steps of the Implementation of Change Model with additional models and evidence as shown in chapter 4 figure 4.1 (see page 118)) was used to ensure that the findings from this part of the thesis could be regarded as trustworthy: i.e. that the programme for the workshops was correct (what was needed to implement the model OA consultation in general practice).

At step 1 the concrete proposal for change was developed by presenting the model OA consultation, as developed in the consensus exercise, at three general practice advisory group meetings and using the insights gained from these meetings to refine the model OA consultation. This resulted in a proposal which was simpler and quicker to explain to GPs than the original consensus model OA consultation (see chapter 4, box 4.4 page 132). The guidance by Grol et al on how to undertake this step <sup>80</sup> states that: i) a systematic approach should be taken, ii) the target group should be involved, iii) the concrete proposal should be in an accessible and attractive format, and iv) there should be opportunities to adapt the proposal (see chapter 2 box 2.2 page 67), and lists and describes characteristics of innovations which might promote or hinder their implementation.

In this thesis a systematic approach with involvement of the target group was taken (the consensus exercise followed by the advisory group meetings), an accessible form of the model OA consultation was developed, and in the workshops there was an opportunity, in the skills training sessions, to adapt the delivery of the model OA consultation to the GPs' own way of consulting. However, despite developing a simplified version of the model OA consultation, the proposal for change required the GP to undertake many consultation tasks, which could require a significant change in practice. The advisory group meetings did not allow for a detailed analysis as to which of the model OA consultation tasks were already usual practice for GPs (the time constraints of the meetings, and the size and representativeness of the groups) and such an analysis could have resulted in a more limited proposal for change. For example, the proposal for change could have explicitly focussed on giving and explaining the diagnosis of OA, and an issue which is returned to below in section 9.4.1.



At step 2 the Theoretical Domains Framework <sup>105</sup> was used as a coding framework for the barriers and facilitators identified during the advisory group meetings. This was a strength in that the Theoretical Domains Framework is a highly regarded tool for categorising determinates of change <sup>117, 170</sup> and enables the model by Michie et al for selecting techniques to address identified determinants to be used. <sup>119</sup> A possible limitation was that the Theoretical Domains Framework was not used to develop the topic guide for the advisory group meetings, but as discussed in chapter 4 (see section 4.6.3 page 143) the topic guide was broad, allowing for a wide discussion covering possible barriers and facilitators.

At step 3 a strength was the explicit use of theory (the Michie model for selecting techniques to address identified determinants of change <sup>119</sup> and adult learning theory <sup>147</sup>) and empirical evidence (evidence from the Cochrane EPOC Group <sup>148</sup> and context-bound skills training <sup>150</sup>) in developing the workshops. An additional strength was the explicit approach to developing the different aspects of the workshops: the approach of systemically identifying content, then techniques, then mode of delivery, and finally addressing practicalities.

#### **9.2.2.2 External validity**

The workshops were developed for a specific purpose: to implement the model OA consultation in the four intervention practices of the MOSAICS trial, and in which a nurse-led OA clinic was available for GPs to refer patients to. For this reason the workshops might not be generalizable to implementing the model OA consultation in practices without the support provided by participation in the trial and the provision of an OA clinic. In addition barriers and facilitators – the determinants of change – identified in this study may not be applicable to other situations. However, the workshops principally focused on the consultation tasks concerned with making, giving and explaining the diagnosis, eliciting and

addressing expectations and the need for analgesia, and promoting OA self-care, all of which are applicable to consultations for OA in practices in general. And the members of the advisory groups, utilised in the identifications of barriers and facilitators, were not participating in the MOSAICS trial and were asked to give opinions based on their own practice. It would be sensible if the workshops are to be used in other circumstances to review, and if necessary revise, the workshop programme to best suit these circumstances, an issues which is returned to in section 9.4.1 below.

In conclusion, given the systematic approach to development of the workshops, it can be argued that the programme for the workshops was correct for the task in hand but, as they were developed for a specific purpose, their use may not be wholly generalisable to other groups of GPs or settings.

### **9.2.3 Methodologies for measuring impact of workshops**

In this section the methods used to evaluate change in clinical practice observed in the videos, change in the self-reported measures and the audit of delivery of the model OA consultation are discussed. The strengths and possible limitations of the measurement instrument and its use in evaluating the videos have been discussed in detail in chapter 6 (see section 6.6.2 page 212) and are not returned to here.

#### **9.2.3.1 Evaluation of change in clinical practice observed in the videos**

##### *Internal validity*

The choice of a before-and-after methodology to evaluate the impact of the workshops on change in clinical practice possibly limits the internal validity of the findings from this evaluation. A before-and-after method cannot control for the possibility that change in

clinical practice may have been due to factors other than the workshops. For example, the change in clinical practice of GPs in the intervention practices may have been related to certain characteristics of these GPs, for example that they were all highly internally motivated to change practice, rather than related directly to their attendance at the workshops. The inherent problem with a before-and-after design is that the participants are not randomly allocated to the groups which are to be compared, as it is this process which evenly distributes characteristics of participants (known and unknown) between the groups to be compared, and overcomes the weakness of a non-randomised methodology such as a before-and-after method.

However, in this thesis it was not possible to randomly allocate GPs to a group which was to attend the workshops and a group which was not. First the allocation of a GP to the “workshop group” or “not workshop group” was determined by random allocation of their practice to intervention or control arm, and not by individual random allocation. And second, once the GPs were allocated by practice to the “workshop group” they all needed to attend the workshops as they were all needed to deliver the GP component of the trial intervention (the model OA consultation).

Given that it was not possible to use a design which individually randomised GPs it might have been possible to compare the change in clinical practice (before and after the workshops) of the GPs in the intervention practices with the change in clinical practice (between two appropriate time-points) of the GPs in the control practices. However, this was not undertaken as, given the resources to undertake the MOSAICS trial, it was not possible to organise and undertake video sessions in all eight practices

Although there are theoretical reasons why a before and after design could result in bias and affect internal validity, it can be argued that as used in this thesis it resulted in a finding which is likely to be trustworthy. The evaluation was limited to the delivery of the model OA consultation which was the specific focus of the workshops (and only the workshops), the assessments were conducted in very close proximity to the workshops (undertaken shortly before, and for time-point two, shortly after the workshops), and the evaluation used paired before and after observations (so that GP characteristics in the before and after observations did not vary). Given these factors it is difficult to envisage that the change in clinical practice observed was not due in substantial part to the impact of the workshops.

#### *External validity*

The aim of this evaluation was to determine if the workshops had an impact on clinical practice and this was measured in terms of competence – practice in a controlled setting – rather than performance – practice in a day-to-day setting. The use of competence and not performance could affect the generalisability of the findings as an increase in competence may not result in an increase in performance. Additionally the results may not be generalizable to the impact of the workshops on GPs in general, given that the GPs in the intervention practices may not be representative of GPs as a whole.

However, in relation to the first point, the consultations with simulated patients were made as real and naturalistic as possible by undertaking them in the GPs' own surgeries and by having detailed and realistic patient scenarios and biographies. And in relation to the second point, the baseline self-report data suggest that prior to the workshops the intervention practice GPs shared beliefs and practice often attributed to GPs in general <sup>9, 60, 206</sup>, for example before the workshops the majority of intervention practice GPs reported they would

use the phrase “wear and tear” in explaining OA, only 20% indicated that OA was a priority for them, only 21% reported that they were very well informed about OA, and awareness of the 2008 NICE OA Guideline and its recommendations was low.

In conclusion, although a before and after design could have resulted in untrustworthy findings, as used in this thesis it can be argued that it did not. And, although the GPs in this study were not selected to be representative of GPs in general, they did at baseline hold similar views about OA to GPs in general, indicating that the findings may well be applied to GPs in general. However, the findings from the video study may not be fully generalizable to the impact of the workshop on day-to-day clinical practice.

### **9.2.3.2 Evaluation of change in questionnaire self-report measures**

#### *Internal validity*

The strength of using a questionnaire survey administered before and after the workshops was that it would enable exploration of change in: i) self-report usual practice for OA (management of the patient in the vignette); ii) self-report uptake of NICE OA Guideline recommendations by GPs and iii) self-report status of determinants of change. It would further enable exploration of how these related to change in clinical practice observed in the videos.

The limitation of the method was the small sample, incorporating the 24 GPs working in the intervention practices and mailed the baseline questionnaire, and the limited response to post-workshop questionnaires achieved in the study. It had been anticipated that response to questionnaires would be high as the GPs were engaged with the MOSAICS trial and it was thought would be motivated to respond. This was true for the baseline questionnaire (83%

response) but not for follow-up (47% response at one month and 44% at five months). If the response at follow-up had been at the level achieved for the baseline questionnaire, then there would have been follow-up data on about 15 GPs and, although the data were for small numbers (20 GPs at baseline compared with the 15 at follow-up), a more robust analysis of the data could have been undertaken than was possible with the follow-up response achieved.

Given that a systematic review of GP response in postal questionnaires found a mean response of 61% <sup>146</sup>, it may not have been realistic, even in this highly selected group of GPs, to have anticipated a response of about 80% throughout the survey. And given the small initial sample and the limited amount of data a response of 60% or less would have produced, it may have been prudent to employ methods to boost response, or to have chosen alternative methods to explore change in usual practice, uptake of NICE OA recommendations and the determinants of change, or not to have attempted to explore them at all.

Taking the latter point first, the argument for not exploring change in self-report of usual practice would be that, since a direct assessment of clinical practice was being undertaken, there would be no additional value in assessing self-report of usual practice, as direct measurement is deemed the measurement of choice if available. <sup>103, 177</sup> However, this is not an argument for not exploring uptake of NICE OA recommendations or the determinants of change as they are not indirect measures of clinical practice but additional measures identified in this thesis as meriting exploration.

Given the small sample involved, qualitative methods could have been considered to explore uptake of NICE OA recommendations and the determinants of change through one-to-one interviews or focus groups. These methodologies would have enabled GP views on these

areas to have been explored and, if interviews had been undertaken after the workshops, these could have explored whether, for example, GPs felt they were more aware of NICE OA recommendations, were more knowledgeable about OA or were more confident in managing OA. However, response rate, representativeness and feasibility would still have been major issues in a small group of GPs who were already giving substantial amounts of their time outside routine practice to the study.

Methods to boost questionnaire response, in addition to email reminders and repeat mailings which were undertaken in this thesis, could have included requiring the GPs to fill in questionnaires as a condition of being involved in the MOSAICS trial or encouragement from the study team to complete and return the questionnaires. But both of these approaches are ethically difficult to justify as, when completing the questionnaires, the GPs are study participants and have the right not to participate, and they need to be fully aware of this right.

#### *External validity*

The generalisability of the findings to all GPs is limited by the representativeness of the GPs in the study to GPs in general. However the baseline self-report questionnaires have established that this group of GPs appear reasonably representative in the range of views, confidence and experience in the management of patients with OA.

In conclusion the limited data available for analysis means that, whilst the baseline survey data are helpful, the follow-up results should be treated with caution and can only be regarded as very tentative outcomes in GPs who attended the workshops and may not be generalizable to GPs in general.

### **9.2.3.3 Practice level audit of delivery in day-to-day practice**

#### *Internal validity*

The biases which may have affected internal validity are recall bias of the patient in remembering what had occurred in the GP consultation and measurement bias of the nurse asking whether a task had been undertaken by the GP and recording the responses.

Recall by the patient of what had occurred in the consultation could have been affected by the time that had elapsed since their GP consultation, and the complexity of what happened in the consultation. The OA clinic appointments were scheduled to be about two weeks after the GP appointment and, although this is not a long period of time, patients may have forgotten the details of what happened in the consultation when asked to recall if certain specific tasks had been undertaken. In addition, if many problems and aspects of care were raised and/or discussed in the consultation, recalling whether the four model OA tasks had taken place may be difficult. In general it is known that remembering verbal information given in a consultation is difficult.<sup>215</sup> This may have resulted in an underestimation of GP delivery of the model OA consultation tasks and it is interesting to note that the task reported to have been undertaken most frequently – giving the OA Guidebook – is the task which might have been expected to be better recalled than the other tasks as it results in a concrete action of the OA Guidebook being given.

Measurement bias by the nurse could have occurred as a result of the nurses knowing that the GPs had been trained to undertake the tasks included in the audit and would have expected that the tasks had been undertaken. The nurse might have asked the question in such a way that prompted for a “yes” answer or might have interpreted the patient’s response in favour of recording a “yes” response. This may have resulted in an overestimation of GP



delivery of the model OA consultation. However, task delivery was found to be as low as 37% of consultations and so this bias is unlikely to have occurred.

#### *External validity*

The audit was only conducted for GP consultations for OA which resulted in an OA clinic appointment and the findings may not be generalizable to all consultation in which the model OA consultation should have been delivered. As concluded in section 9.1.4.4 (see page 271) the findings should be regarded as a “best case scenario” for delivery of the model OA consultation in day-to-day practice.

In conclusion the method used to undertake the audit may have resulted in an underestimation of model OA consultation delivery and the findings may not be generalizable to the delivery of the model OA consultation in general in day-to-day practice. However, as the findings are to be regarded as a “best case scenario” but may be an underestimate of delivery for this scenario, the findings may be a reasonable estimation of delivery of the model OA consultation in general.

### **9.3 Comparison of thesis findings with those found in other studies**

This section first compares the content and style of the model OA consultation and second compares the implementation of the model OA consultation with recently published relevant literature. The aim is to set the findings of this thesis in the context of current new knowledge and initiatives for the care of people with OA in general practice.

### **9.3.1 Content of the model OA consultation**

In the discussion in chapter 3 (see section 3.5.2 page 113) it was noted that there had been no previous studies defining the content for initial GP assessment and treatment of older adults presenting with peripheral joint pain, and there have been no such studies since the consensus exercise findings were published in 2013.<sup>202</sup> A consensus exercise study from the OA group at Keele University, related to the one undertaken for this thesis, sought to define the content of an opportunistic OA consultation by any member of the primary care team – when a patient with OA consults for an unrelated problem such as for a blood pressure check – and was published in June 2013.<sup>216</sup> The three core tasks, those which all consensus exercise participants (from a wide range of primary care disciplines) would include, were: i) asking “how things are going with their OA”, ii) asking “about type and amount of pain the patient has” and iii) asking “whether the patient is taking regular analgesia”, and echoes the priority given to pain management in the model OA consultation developed in this thesis.

An interview study exploring the views of people with OA and rheumatoid arthritis about the knowledge and skills nurses and allied health professionals need to have to manage these conditions was published in 2013 and reported on the views of a small sample of people with OA.<sup>217</sup> The themes identified for OA were that participants wanted: help with understanding and managing their pain, support for OA self-management to be included in the consultation (so that patients are listened to and involved with decisions), and professionals with an expertise in OA. All of which are addressed by the model OA consultation either by specific consultation tasks or by the totality of the consultation in seeking to enhance the expertise of GPs for OA.

Narrative literature reviews from other researchers in the research centre at Keele University have recently been published on why people with OA do, or do not, consult their GP for the problem <sup>218</sup> and comparing patients' experience of consultations for OA with GPs' attitudes and beliefs about OA. <sup>219</sup> The first review found that pain and problems with activities of daily living were frequent reasons why people consulted for OA, and that patients' perceptions that OA is an inevitable consequence of aging, that nothing can be done and that GPs have a negative attitude to OA were reasons why they did not consult. The second review found that: i) delay in diagnosis was often reported, ii) "wear and tear" was used in preference to referring to the condition as osteoarthritis, iii) patients felt their symptoms were not legitimised in consultations, iv) OA was portrayed negatively (to be expected / inevitably worse / no treatment), and v) pain management was a priority for patients. In addition recent work on defining a set of patient-reported quality indicators for OA both in the UK (K Dziedzic, personal communication) and Norway <sup>220</sup> has produced a questionnaire instrument which includes as quality indicators: provision of verbal and written information about OA and its treatment; advice on self-managing OA and provision of support for this; advice about exercises and physical activity and if needed weight loss and referral to access services for these interventions.

The issues from the reviews and from aspects of care included in the quality indicators are all covered by the model OA consultation, further validating the content and relevance of the model consultation developed in this thesis: namely that it does address issues important to patients.

From a more general perspective in the UK on the delivery of care in general practice, the model OA consultation resonates with current thinking. A recent enquiry commissioned by

the Royal College of General Practitioners in the UK on patient-centred care in the 21<sup>st</sup> century <sup>221</sup> has emphasised the need to improve the provision of support for self-management, and that training and education should be “aligned to the delivery of patient centred care re-orientating and diversifying the nature of the consultation process” <sup>221</sup>

From an international perspective two studies have recently been published which are relevant to the model OA consultation. First, a qualitative interview study from the Netherlands was undertaken as part of an initiative to implement a stepped care strategy for non-surgical treatment of hip or knee OA, known as BART (Beating osteoARThritis). <sup>222</sup> The study aimed to identify patient reported barriers and facilitators of the use by patients of a self-management booklet for OA. <sup>223</sup> The study found that one barrier was the lack of endorsement of the booklet by healthcare professionals and more generally their lack of endorsement of non-surgical treatment for OA. Integral to the development of the model OA consultation was the idea that it was in-part to “sell” the OA Guidebook to the patient, and this finding from the Netherlands confirms the importance of the model OA consultation tasks relating to promoting and supporting self-management in increasing the uptake of the use of written material.

Second, an international consensus study was undertaken to agree a list of key messages for patients about OA. <sup>224</sup> Consensus participants were 51 OA experts from 13 countries and nine people with OA living in Melbourne Australia. The participants identified 21 key messages of which 14 relate directly to tasks in the model OA consultation: one message that OA is not inevitably progressive, three concerning self-management and its support, seven concerning exercise and physical activity, one about weight loss, and two about pain medication. Of the remaining seven key messages, three related to surgery, three to OA

knowledge (that OA is not just a disease of the cartilage, that x-rays do not help with prognosis and that OA symptoms vary from person to person) and one that non-drug treatments are as effective as pain relieving drugs. Although these seven messages were not directly included in the model OA consultation, they were all covered in the workshops and could be incorporated in any revision to the model OA consultation.

### **9.3.2 Implementation of enhanced care for people with OA in general practice**

This thesis has described the development, delivery and impact of a behaviour change intervention to implement the model OA consultation and so enhance the care of people with OA. Although the context was that of a randomised control trial, the implementation was embedded in everyday general practice and can be viewed as adding to current research on how to enhance the care of people with OA in day-to-day general practice. This section presents recently published research in this area, both concerning how care is currently delivered and how to enhance it.

#### **9.3.2.1 Current delivery of care for people with OA in general practice**

In the UK a retrospective study published this year on the care of people with chronic pain, either due to osteoarthritis or low back pain, used patient records from 264 patients (64% having OA) in five general practices to describe the healthcare use of these patients and their drug and non-drug management.<sup>225</sup> The authors found that most patients (62%) had been prescribed up to five different drugs for pain but did not find any evidence of a standard approach to the management of chronic pain in general practice. They also found that most resource use was due to GP visits: for those with a newly diagnosed condition a median of 3.7 yearly for pain and 6.3 for non-pain-related problems, and those with an established

problem 2.3 and 8.3 yearly respectively. The authors called for further education of GPs in the management of OA and chronic low back pain.

An update to the study by Steel et al reporting achievement in 2004/5 for OA quality indicators, which was described in chapter 1 (see section 1.6 page 30), was published in 2014 and reported on achievement over the next six years.<sup>226</sup> In 2004/05 the percentage achievement for the four OA quality indicators was 29.4%, in 2006/07 and 2008/09 this dipped to 22.4% and 28.3% respectively and in 2010/11 increased slightly to 33.6%. This study highlights the need for ongoing initiatives to improve the care for people with OA in general practice, where the majority of care for OA is delivered, and that little has changed over the last several years.

### **9.3.2.2 Enhancement of care for people with OA in general practice**

#### *The BART initiative*

In the Netherlands the implementation of enhanced care for people with OA - the BART stepped care strategy referred to above - has been studied in 38 general practices in and around Nijmegen.<sup>227</sup> The strategy has three steps and covers diagnosis and assessment, treatment, and follow-up and evaluation (figure 9.1).

	Step 1	Step 2	Step 3
Diagnostic procedures and assessment	<ul style="list-style-type: none"> <li>- Medical history and physical examination</li> <li>- Assessment function and activity limitations</li> <li>- Setting mutual goals</li> </ul>	<ul style="list-style-type: none"> <li>- Radiological assessment<sup>a</sup></li> <li>- Assessment of pain coping and psychosocial factors</li> <li>- Adjust goals</li> </ul>	<ul style="list-style-type: none"> <li>- Consultation specialist</li> <li>- Adjust goals</li> </ul>
Treatment modalities	<ul style="list-style-type: none"> <li>- Education</li> <li>- Lifestyle advice</li> <li>- Medication<sup>b</sup> <ul style="list-style-type: none"> <li>• Acetaminophen</li> <li>• Glucosaminesulphate</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>- Exercise therapy</li> <li>- Dietary therapy</li> <li>- Medication<sup>b</sup> <ul style="list-style-type: none"> <li>• (Topical) NSAIDs</li> <li>• Tramadol</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>- Multidisciplinary care</li> <li>- TENS</li> <li>- Medication<sup>b</sup> <ul style="list-style-type: none"> <li>• Intra-articular injections</li> </ul> </li> </ul>
Evaluation	- After 3 months <sup>c</sup>	- After 3–6 months <sup>c</sup>	- Patient sets interval

<sup>a</sup> If there is a discrepancy between medical history and physical examination

<sup>b</sup> Consult current guidelines for an adequate dose [1, 27]

<sup>c</sup> Or earlier, if the symptoms persist or increase

Figure 9.1 BART (Beating osteoARThritis) stepped care strategy for people with OA. With permission from Smink et al 2011 <sup>222</sup>

Implementation activities aimed at GPs included: education outreach visits to all the practices to inform them about the stepped care strategy and an OA self-management booklet developed for the strategy; mailing of educational material about the strategy to the 70 participating GPs; an invitation to attend an OA seminar and workshop; and mailing of reminder material. Activities occurred between May 2010 and July 2012. Implementation was evaluated by undertaking a two-year prospective cohort study, following the implementation activities, of patients presenting to participating GPs with knee or hip OA. The aim was to describe healthcare use of interventions included in the strategy following implementation. Data on healthcare use was obtained for 313 patients and at two years step 1 interventions, apart from glucosamine, had been used by about three-quarters of patients and the step 2 intervention of exercise therapy by about two-thirds. The authors undertook further detailed analysis to determine associations with uptake of OA healthcare use <sup>227</sup> and whether interventions were used in the order recommended in the stepped care strategy. <sup>228</sup> They concluded for the former that patient characteristics were the most frequent determinant of OA healthcare use, and for the latter that the order of use was “modestly

consistent” with that recommended in the stepped care strategy. The research group also investigated whether patient outcomes of pain and physical functions at two years differed in patients who had received stepped care strategy “consistent” care from those who received “inconsistent” care, and found no statistically significant differences.

Although the approach to implementing enhanced OA care differed between the BART initiative and this thesis, both addressed important questions concerning the care of people with OA in general practice: the former how to better provide systematic care for OA and the latter how to better provide patient-centred consultations for OA. It will be important to learn and integrate the lessons from these two studies, a discussion which will be returned to in the section on implications for research and clinical practice.

#### *Template use in MOSAICS trial*

From the wider MOSAICS research team, the effect of introducing the OA template (see chapter 1 Box 1.5 page 35) to the eight practices participating in the MOSAICS trial during the run-in period to the trial has been reported.<sup>229</sup> The template enabled the delivery of eight aspects of OA care to be recorded during consultations for OA or chronic peripheral joint pain. The aim of the study was to determine if eight quality indicators concerning the care recorded in the template had been met. For patients in whom the template was used (n = 1147) the quality indicators for undertaking a pain assessment and a functional assessment were met for over 90% of patients, for paracetamol and topical non-steroidal anti-inflammatory drugs (NSAIDs) use in 85% and 73% respectively, and for information giving and exercise advice in 74% in 76% respectively. The quality indicators which were met for the fewest number of patients were weight loss advice (64%) and referral to physiotherapy (54%). Prescribing relating to the OA or joint pain consultation was analysed for the six-



month period before the template was installed and for the first six-months of its use. Prescriptions for paracetamol increased from 13% of patients consulting prior to the template's use to 17% consulting after its installation and for topical NSAIDs increased from 15% to 25%, both statistically significant increases.

Implementing the use of the template was not included in the behaviour change intervention described in this thesis, as it was introduced to both control and intervention practices prior to randomisation, but from the data presented above it has been shown to effectively prompt for the recording of care and for evidence-based prescribing. Given this finding, the template can be seen as an aid to enhancing the care for people with OA, and its use in combination with the behaviour change intervention described in this thesis will be returned to in the section below on clinical implications

## **9.4 Implications for clinical practice and research**

### **9.4.1 Clinical practice implications**

#### **9.4.1.1 Current clinical applications of material developed in this thesis**

The materials developed in this thesis for the workshops have to date been used to produce educational resources for national and local use: for national use in an e-learning module on OA, a pamphlet on OA for healthcare professionals and the OA component of a musculoskeletal skills training workshop for GPs; and for local use in a revised workshop programme for GPs in south Shropshire.

The e-learning module on OA is one of seven modules in an online course on musculoskeletal care and is sponsored by Arthritis Research UK (resulting in free access to all healthcare professionals) and is hosted by the UK Royal College of General Practitioners

as part of their Online Learning Environment (<http://elearning.rcgp.org.uk/>). The content of the OA module was developed from that of the OA Update delivered in workshop one and incorporates video clips of the demonstration videos (see chapter 5 footnote aa page 179) undertaken by myself with the simulators. As of 13<sup>th</sup> May 2015, and since the launch of the online course, 3053 people have accessed the OA module on 113,006 occasions, and 2015 have completed the MSK modules including the OA module (usage statistics supplied by Royal College of General Practitioners, personal communication).

The OA pamphlet for healthcare professionals was part of the Hands On series commissioned and produced by Arthritis Research UK<sup>hh</sup> and is entitled “Osteoarthritis: a modern approach to diagnosis and management” (see appendix 7.8 page 393) and was co-authored with members of the MOSAICS research team. The pamphlet covers the pathophysiology of OA; making, giving and explaining the diagnosis; supporting OA self-care; and treatments recommended in the 2008 NICE OA Guideline. The pamphlet was distributed free to subscribers to the Hands On series and to all members of the UK Royal College of General Practitioners in the autumn of 2011.

The musculoskeletal skills training workshop was developed by a team at Arthritis Research UK, is run under the auspices of the UK Royal College of General Practitioners, and is delivered regionally. The OA component consists of small group work on the management of an older patient with knee OA and uses the approach developed in this thesis of making (including how to examine the knee), giving and explaining the diagnosis, and supporting OA self-care. The component is facilitated by a GP with a special interest in musculoskeletal

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<sup>hh</sup> Hands On is a publication providing practical advice for GPs on the management of rheumatic disease and is published three times a year. It is now in its seventh series and the OA pamphlet was issue 10 of series 6 (<http://www.arthritisresearchuk.org/health-professionals-and-students/reports/hands-on/hands-on-autumn-2011.aspx> accessed May 2105).

medicine and trained to deliver the small group session. To date 30 GPs have been trained, or are in training, to deliver the RCGP workshop, 1,500 GPs have attended a RCGP workshop and 200 GPs have attended a similar workshop delivered by the south London Academic Health Science Network <sup>ii</sup> (T Margham, personal communication).

The revised workshop programme for GPs in south Shropshire was developed for an implementation project funded from the NHS Regional Innovation Fund. <sup>jj</sup> The project was entitled JIGSAW (Joint Implementation of Guidelines for OsteoArthritis in the West Midlands) and was initiated by one of the GPs participating in the MOSAICS study who is a locality lead for Shropshire Clinical Commissioning Group (CCG). The programme was condensed to two hour long workshops covering the pathophysiology and burden of OA, the tasks in the model OA consultation and a practical session in explaining OA (slides for use in the workshops are shown in appendices 9.1 and 9.2 pages 439 and 440). The workshops were run in the autumn and winter of 2014 in individual practices for the GPs and practice nurses in these practices, and they have been facilitated by four GP Champions who were trained to deliver the workshops by a member of the MOSAICS research team. Process evaluations of the care received by a sample of patients consulting for OA in the 15 practices are planned for later this year, as is an extension of the scheme across the whole of Shropshire and in the neighbouring Telford and Wrekin CCG.

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<sup>ii</sup> England has 15 Academic Health Science networks which have been given the remit to increase the uptake of innovations in the National Health Service through a collaboration between industry, academic and health service providers (URL: <https://www.england.nhs.uk/ourwork/part-rel/ahsn/> accessed 01/06/2015)

<sup>jj</sup> NHS England launched a Regional Innovation Fund in 2013 to “to support and promote the adoption of innovation and the spread of best practice across the NHS” and a successful bid was made from Shropshire Clinical Commissioning Group with support from the implementation team at Keele University. The bid was to implement the approach to the care of people with OA developed in the MOSAICS trial in 15 practices in south Shropshire. Two of these practices were control arm practices in the trial and GPs and practice nurses from these two practice attended the trial intervention workshops which were run at the end of the trial.

#### **9.4.1.2 Future clinical applications of the implementation approach developed in this thesis**

With the reported ongoing suboptimal levels of care for people with OA in the UK <sup>226</sup> (see section 9.3.2.1 page 289), the increasing worry about the efficacy and safety of paracetamol (so necessitating more emphasis on non-drug treatment of OA), <sup>230, 231</sup> and the call by the UK Royal College of General Practitioners for more emphasis on supporting self-care, <sup>221</sup> the need to further apply the learnings from this thesis on how best to implement better care for people with OA is evident.

The findings from the video study suggest that not all elements of the model OA consultation may need to be the specific focus of ongoing implementation: the tasks relating to pain management were well undertaken at baseline and may not need to be covered in detail in future implementation initiatives. The impact of the workshops was principally to enhance GP skills in undertaking the model OA consultation. It would be important in future implementation initiatives to capitalise on the efficacy of the workshops in changing GP practice in this area.

Scaling up the delivery of the four workshops as delivered for this thesis to a large number of GPs on repeated occasions would not be feasible given amount of protected time needed for GPs to attend and the resources needed to deliver the workshops. However, given that the principal impact was on OA consultation skills, that the skills training sessions were reported as the most useful aspect of the workshops, that care delivered in OA consultations is known to be generally suboptimal, and that the enhancement in consultation skills demonstrated in this thesis is likely to be applicable to GPs in general it would be important to develop this aspect of the workshops for a wider audience in the UK. Further work will

need to be undertaken with local and national interested parties on running OA consultation skills workshops for GPs, and other healthcare professionals, to capitalise on the work undertaken for this thesis and to enhance the care for people with OA in the UK.

This thesis has demonstrated a change in GP competency in delivering the model OA consultation and has explored GP performance in delivering it in day-to-day practice. Measuring competency, as undertaken in the video study, is resource intensive and cannot be scaled up to evaluate the impact of activities aimed at large numbers of GPs. Furthermore it is a change in performance, and not just competency, which is the ultimate goal in enhancing care for people with OA. Feasible and acceptable methods and measures to assess performance will need to be utilised to evaluate larger scale activities to enhance OA care, for example the use of patient-report OA quality indicators <sup>220</sup> in surveys of people presenting with OA to GPs.

However, optimal levels of care for people with OA, as recommended in the 2014 NICE OA Guideline <sup>2</sup> and measured by OA quality indicators <sup>226, 229</sup> are unlikely to be achieved by simply focussing on activities aimed at GP clinical practice, although this area of practice does need to be optimised. For example, and for the reasons why written information and a new service provision were included in the MOSAICS trial intervention (see chapter 3 section 3.2.1.3 page 84), activities to enhance the care people with OA receive will need to address timely provision of relevant written material and the role the wider healthcare team, and especially the role of practice nurses as in the MOSAICS trial, in supporting people with OA to care for themselves. In addition, many people with OA have multiple other conditions which need care and attention, <sup>232-234</sup> and enhancing the care of people with OA will need to be undertaken in this context. This is a large agenda for change and will need an

implementation plan more complex than developed to enhance GP consultations for OA in this thesis, but the work undertaken in this thesis can guide how such an implementation plan could be developed and has determined how an important aspect of the care for people with OA – the GP OA consultation – can be enhanced.

#### **9.4.2 Research implications**

The research undertaken for this thesis has raised a number of questions, which are detailed below with ideas on how they might be answered:

1. The difficulty in getting GPs to use the word “osteoarthritis” in giving the diagnosis raises the question as to why. A possible first step in finding an answer would be to undertake a review of relevant qualitative literature to determine what reasons GPs, other healthcare professionals and patients might have in not wanting to use the word “osteoarthritis” and whether other words or phrases have been proposed in its place. This could lead to original work to explore better terminology to name osteoarthritis, or better ways promulgate the use of the term “osteoarthritis”
2. Although the video study determined that after the workshops GPs better undertook the tasks relating to explaining that OA is not inevitably progressive and is treatable, it has not provided the answer to the question as to how best to give these explanations: for example which key words or phrases to use that help patients better understand OA and its treatment. In addition this study did not explore how best to explain “what OA is” and although in the workshops the case was made for OA being a “disease” of the whole joint and not simply of the cartilage, explaining this to patients was not assessed in the video study. As a first step to exploring how to explain OA, secondary analysis of the videos could be undertaken to determine the words and phrases used in explaining OA and its treatment. Other work could utilise frameworks for explanations which have been

developed for other conditions, for example when talking to patients with medically unexplained symptoms<sup>185, 235, 236</sup> and qualitative work could be undertaken with patients and healthcare professionals in developing and testing a “model OA explanation”.

3. In addition to exploring how best to explain “what OA is”, the question of how best to explain how OA causes joint pain has personally occurred to me while undertaking this thesis. Although OA is a long term condition, pain is generally episodic and giving patients an explanation as to why this is the case seems helpful in supporting OA self-care. There is much in the basic science literature about the pathophysiology of OA and which aspects might account for the pain people experience,<sup>237-239</sup> and there is an Arthritis Research UK Pain Centre at Nottingham University<sup>kk</sup> which is investigating “the mechanisms that lead to the chronic pain experienced by sufferers of arthritis, in order to improve the treatment of that pain”. In addition to the “bio” aspects, there are many psycho-social factors which affect how pain is experienced<sup>5, 10, 240-242</sup> and which need to be included in an explanation about OA pain. A first step would be to draw together these threads to produce a narrative for patients and professionals.

## 9.5 Reflections

Undertaking the work presented in this thesis has very much built on work I have undertaken throughout my professional life as a practising GP – planning and organising initiatives, team work, teaching, analysis of data and writing – and has used the knowledge, skills and experience I have gained through undertaking these activities. It has also built on the academic work I undertook for my MPhil, which described, in relation to a stepped model of care for knee OA, the suboptimal care patients report receiving. The work in this thesis

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<sup>kk</sup> Arthritis Research UK has funded a number of Centres of Excellence focussing on musculoskeletal research, including the one in Nottingham (URL <http://www.nottingham.ac.uk/paincentre/index.aspx> accessed 18th May 2015)

has enabled me to address in a practical manner how in part to bridge the gap between what is recommended and what is delivered identified in my MPhil.

It has opened new areas to me and with the support of my supervisors has enabled me to gain a firm understanding of implementation methodology and of validity and reliability testing of a measurement instrument. The experience of developing and then delivering the workshops with colleagues from the MOSAICS trial team, and working with a group of enthusiastic GPs to practically enhance care for OA, was very rewarding.

The one aspect of the PhD I would with hindsight not have undertaken was the before and after questionnaire survey of GPs. Although the idea of evaluating the impact of the workshops from different perspectives had a sound rational basis, it would have been good to have realised that the questionnaire would have given very limited data with which to undertake any meaningful analysis.

## **9.6 Conclusions**

This study in the context of a trial to investigate how to enhance the care of people with OA in general practice has:

- Developed, using consensus methodology, a model OA consultation for the initial consultation between a GP and an older patient presenting with peripheral joint pain
- Developed, using a theory driven implementation approach, a behaviour change intervention to implement the model OA consultation in day-to-day practice
- Delivered the behaviour change intervention in a series of workshops to GPs working in four practices and received positive learner reactions



- Developed methods and measures to evaluate the impact of the workshops on the competence of GPs to deliver the model OA consultation, and explored their impact on self-report of usual practice, uptake of NICE OA recommendations, determinants of change, and performance of model OA consultation delivery
- Developed and tested a measurement instrument to assess GP competence for model OA consultation delivery
- Determined that GP competence in delivery of the model OA consultation was enhanced by the workshops and identified which aspects of the consultation were enhanced
- Informed the development of a number of educational activities for GPs and other healthcare professionals on OA care, which have been distributed to and/or accessed by a rising number of healthcare professionals.

## REFERENCES

1. Conaghan PG, Dickson J, Grant RL, Guideline DG. Care and management of osteoarthritis in adults: summary of NICE guidance. *British Medical Journal* 2008;336(7642):502-3.
2. Osteoarthritis. Care and management in adults. Available at: <http://guidance.nice.org.uk/CG177/NICEGuidance/pdf/English>. Accessed 16/06/2014.
3. Dieppe P. The management of osteoarthritis in the third millennium. *Scandinavian Journal of Rheumatology* 2000;29(5):279-81.
4. Kellgren JH, Lawrence JS. Radiological assessment of osteoarthrosis. *Annals of the Rheumatic Diseases* 1957;16:494-501.
5. Croft P. The epidemiology of osteoarthritis: Manchester and beyond. *Rheumatology (Oxford)* 2005;44 Suppl 4:iv27-32.
6. Guermazi A, Eckstein F, Hellio Le Graverand-Gastineau MP, Conaghan PG, Burstein D, Keen H, et al. Osteoarthritis: current role of imaging. *Medical Clinics North America* 2009;93(1):101,26, xi.
7. Ong BN, Jinks C. 'Walking like John Wayne': open-format diaries of people with knee pain and disability. *Chronic Illness* 2006;2(1):21-6.
8. Sanders C, Donovan JL, Dieppe P. The significance and consequences of having painful and disabled joints in older age: co-existing accounts of normal and disrupted biographies. *Sociology of Health and Illness* 2002;24:227-53.

9. Jinks C, Ong BN, Richardson JC. A mixed methods study to investigate needs assessment for knee pain and disability. Population and individual perspectives. *BMC Musculoskeletal Disorders* 2007;8:59.
10. Hadler NM. Knee pain is the malady--not osteoarthritis. *Annals Internal Medicine* 1992;116(7):598-9.
11. Jinks C, Jordan K, Ong BN, Croft P. A brief screening tool for knee pain in primary care (KNEST). 2. Results from a survey in the general population aged 50 and over. *Rheumatology (Oxford)* 2004;43(1):55-61.
12. Dawson J, Linsell L, Zondervan K, Rose P, Randall T, Carr A, et al. Epidemiology of hip and knee pain and its impact on overall health status in older adults. *Rheumatology (Oxford)* 2004;43(4):497-504.
13. Dahaghin S, Bierma-Zeinstra SM, Reijman M, Pols HA, Hazes JM, Koes BW. Prevalence and determinants of one month hand pain and hand related disability in the elderly (Rotterdam study). *Annals of the Rheumatic Diseases* 2005;64(1):99-104.
14. Weekly Returns Service Annual Prevalence Report 2007. Available at: [http://www.rcgp.org.uk/clinical-and-research/~media/Files/CIRC/CIRC-76-80/BRU\\_Annual\\_prevalence\\_report\\_2007.ashx](http://www.rcgp.org.uk/clinical-and-research/~media/Files/CIRC/CIRC-76-80/BRU_Annual_prevalence_report_2007.ashx). Accessed 20/06/2014.
15. Towards a Common Language for Functioning, Disability and Health ICF The International Classification of Functioning, Disability and Health. Available at: <http://www.who.int/classifications/icf/training/icfbeginnersguide.pdf>. Accessed 14/02/2014.

16. Wenham CYJ, Conaghan PG. Osteoarthritis. In: Warburton L, editor. *Musculoskeletal Disorders in Primary Care. A guide for GPs. First ed.* London: Royal College of General Practitioners; 2012. p. 185-211.
17. Gallagher WJ, Nicolic S. Pain. In: Swash M, Glynn M, editors. *Hutchinson's Clinical Practice An integrated approach to clinical practice. Twenty-second ed.* Saunders; 2007. p. 450-5.
18. National Collaborating Centre for Chronic Conditions. *Osteoarthritis: national clinical guideline for care and management in adults.* London: Royal College of Physicians; 2008.
19. Altman R, Asch E, Bloch D, Bole G, Borenstein D, Brandt K, et al. Development of criteria for the classification and reporting of osteoarthritis. Classification of osteoarthritis of the knee. Diagnostic and Therapeutic Criteria Committee of the American Rheumatism Association. *Arthritis and Rheumatism* 1986;29(8):1039-49.
20. Altman R, Alarcon G, Appelrouth D, Bloch D, Borenstein D, Brandt K, et al. The American College of Rheumatology criteria for the classification and reporting of osteoarthritis of the hip. *Arthritis and Rheumatism* 1991;34(5):505-14.
21. Zhang W, Doherty M, Leeb BF, Alekseeva L, Arden NK, Bijlsma JW, et al. EULAR evidence-based recommendations for the diagnosis of hand osteoarthritis: report of a task force of ESCISIT. *Annals of the Rheumatic Diseases* 2009;68(1):8-17.
22. Zhang W, Doherty M, Peat G, Bierma-Zeinstra MA, Arden NK, Bresnihan B, et al. EULAR evidence-based recommendations for the diagnosis of knee osteoarthritis. *Annals of the Rheumatic Diseases* 2010;69(3):483-9.

23. Lane NE, Brandt K, Hawker G, Peeva E, Schreyer E, Tsuji W, et al. OARSI-FDA initiative: defining the disease state of osteoarthritis. *Osteoarthritis and Cartilage* 2011;19(5):478-82.
24. Osteoarthritis: a modern approach to diagnosis and management. Available at: <http://www.arthritisresearchuk.org/health-professionals-and-students/reports/hands-on/hands-on-autumn-2011.aspx>. Accessed 16/06/2014.
25. Savigny P, Watson P, Underwood M, Guideline Development Group. Early management of persistent non-specific low back pain: summary of NICE guidance. *British Medical Journal* 2009;338:b1805.
26. Doherty M, Lanyon P, Hosie G. *Collected Reports on the Rheumatic Diseases 2005 Series 4 Osteoarthritis of the Knee and hip*. Chesterfield: Arthritis Research UK; 2001 (revised 2005).
27. Warburton L. *Musculoskeletal Disorders in Primary Care*. First ed. London: Royal College of General Practitioners; 2012.
28. Jordan KM, Arden NK, Doherty M, Bannwarth B, Bijlsma JW, Dieppe P, et al. EULAR Recommendations 2003: an evidence based approach to the management of knee osteoarthritis: Report of a Task Force of the Standing Committee for International Clinical Studies Including Therapeutic Trials (ESCISIT). *Annals of the Rheumatic Diseases* 2003;62(12):1145-55.
29. Zhang W, Doherty M, Arden N, Bannwarth B, Bijlsma J, Gunther KP, et al. EULAR evidence based recommendations for the management of hip osteoarthritis: report of a task

force of the EULAR Standing Committee for International Clinical Studies Including Therapeutics (ESCISIT). *Annals of the Rheumatic Diseases* 2005;64(5):669-81.

30. Woolf AD, Pfleger B. Burden of major musculoskeletal conditions. *Bulletin of the World Health Organisation* 2003;81:646-56.

31. Pereira D, Peleteiro B, Araujo J, Branco J, Santos RA, Ramos E. The effect of osteoarthritis definition on prevalence and incidence estimates: a systematic review. *Osteoarthritis and Cartilage* 2011;19(11):1270-85.

32. Kellgren JH, Lawrence JS. Osteo-arthritis and disk degeneration in an urban population. *Annals of the Rheumatic Diseases* 1958;17(4):388-97.

33. Peat G, McCarney R, Croft P. Knee pain and osteoarthritis in older adults: a review of community burden and current use of primary health care. *Annals of the Rheumatic Diseases* 2001;60(2):91-7.

34. Von Korff M, Ormel J, Keefe FJ, Dworkin SF. Grading the severity of chronic pain. *Pain* 1992;50:133-49.

35. Bellamy N, Buchanan W, Goldsmith C, Campbell J, Stitt L. Validation study of WOMAC: a health status instrument for measuring clinically important patient relevant outcomes to antirheumatic drug therapy in patients with osteoarthritis of the hip or knee. *Journal of Rheumatology* 1998;15:1833-40.

36. Bellamy N. *WOMAC Osteoarthritis Index. A User's Guide*. Ontario: McMasters University; 1996.

37. Dziedzic K, Thomas E, Hill S, Wilkie R, Peat G, Croft PR. The impact of musculoskeletal hand problems in older adults: findings from the North Staffordshire Osteoarthritis Project (NorStOP). *Rheumatology (Oxford)* 2007;46(6):963-7.
38. Dahaghin S, Bierma-Zeinstra SM, Ginai AZ, Pols HA, Hazes JM, Koes BW. Prevalence and pattern of radiographic hand osteoarthritis and association with pain and disability (the Rotterdam study). *Annals of the Rheumatic Diseases* 2005;64(5):682-7.
39. Thomas E, Peat G, Harris L, Wilkie R, Croft PR. The prevalence of pain and pain interference in a general population of older adults: cross-sectional findings from the North Staffordshire Osteoarthritis Project (NorStOP). *Pain* 2004;110:361-8.
40. Thomas E, Peat G, Croft P. Defining and mapping the person with osteoarthritis for population studies and public health. *Rheumatology (Oxford)* 2014;53(2):338-45.
41. Ware J, Kosinski M, Keller SD. A 12-item Short-Form Health Survey: construction of scales and preliminary tests of reliability and validity. *Medical Care* 1996;34:220-33.
42. Busija L, Pausenberger E, Haines TP, Haymes S, Buchbinder R, Osborne RH. Adult measures of general health and health-related quality of life.. *Arthritis Care and Research* 2011;63 Suppl 11:S383-412.
43. Bryman A. *Social Research Methods*. New York: Oxford University Press; 2007.
44. Grime J, Richardson JC, Ong BN. Perceptions of joint pain and feeling well in older people who reported being healthy: a qualitative study. *British Journal of General Practice* 2010;60(577):597-603.

45. Porcheret M, Hughes R, Evans D, Jordan K, Whitehurst T, Ogden H, et al. Data quality of general practice electronic health records: the impact of a program of assessments, feedback, and training. *Journal of the American Medical Information Association* 2004;11(1):78-86.
46. The Quality of Nationally Submitted Health and Social Care Data England, Annual Report, 2013 . Available at: <http://www.hscic.gov.uk/catalogue/PUB11530/second-annual-data-qual-rep-2013.pdf>. Accessed 20/06/2014.
47. Jordan K, Clarke AM, Symmons DP, Fleming D, Porcheret M, Kadam UT, et al. Measuring disease prevalence: a comparison of musculoskeletal disease using four general practice consultation databases. *British Journal of General Practice* 2007;57(534):7-14.
48. Jordan KP, Joud A, Bergknut C, Croft P, Edwards JJ, Peat G, et al. International comparisons of the consultation prevalence of musculoskeletal conditions using population-based healthcare data from England and Sweden. *Annals of the Rheumatic Diseases* 2014;73(1):212-8.
49. Read Codes. Available at: [http://systems.hscic.gov.uk/data/uktc/readcodes/index\\_html](http://systems.hscic.gov.uk/data/uktc/readcodes/index_html). Accessed 20/06/2014.
50. What Do General Practitioners See? Available at: <http://www.keele.ac.uk/media/keeleuniversity/ri/primarycare/bulletins/MusculoskeletalMatters1.pdf>. Accessed 20/06/2014.



51. Royal College of General Practitioners Research and Surveillance Centre. Available at: <http://www.rcgp.org.uk/clinical-and-research/research-and-surveillance-centre.aspx>. Accessed 02/05/2014.
52. Jordan KP, Kadam UT, Hayward R, Porcheret M, Young C, Croft P. Annual consultation prevalence of regional musculoskeletal problems in primary care: an observational study. *BMC Musculoskeletal Disorders* 2010;11:144.
53. Porcheret M, Jordan K, Jinks C, Croft P, Primary Care Rheumatology Society. Primary care treatment of knee pain--a survey in older adults. *Rheumatology (Oxford)* 2007;46(11):1694-700.
54. Osteoarthritis in General Practice. Data and perspectives. Available at: <http://www.arthritisresearchuk.org/policy-and-public-affairs/reports-and-resources/reports.aspx>. Accessed 20/06/2014.
55. Hochberg MC, Altman RD, April KT, Benkhalti M, Guyatt G, McGowan J, et al. American College of Rheumatology 2012 recommendations for the use of nonpharmacologic and pharmacologic therapies in osteoarthritis of the hand, hip, and knee. *Arthritis Care and Research* 2012;64(4):455-74.
56. Zhang W, Doherty M, Leeb BF, Alekseeva L, Arden NK, Bijlsma JW, et al. EULAR evidence based recommendations for the management of hand osteoarthritis: report of a Task Force of the EULAR Standing Committee for International Clinical Studies Including Therapeutics (ESCISIT). *Annals of the Rheumatic Diseases* 2007;66(3):377-88.

57. Fernandes L, Hagen KB, Bijlsma JWJ, Andreassen O, Christensen P, Conaghan PG, et al. EULAR recommendations for the non-pharmacological core management of hip and knee osteoarthritis. *Annals of the Rheumatic Diseases* 2013;72:1125-1135.
58. Zhang W, Nuki G, Moskowitz RW, Abramson S, Altman RD, Arden NK, et al. OARSI recommendations for the management of hip and knee osteoarthritis: part III: Changes in evidence following systematic cumulative update of research published through January 2009. *Osteoarthritis and Cartilage* 2010;18(4):476-99.
59. Cabana MD, Rand CS, Powe NR, Wu AW, Wilson MH, Abboud PA, et al. Why don't physicians follow clinical practice guidelines? A framework for improvement. *Journal of the American Medical Association* 1999;282(15):1458-65.
60. Steel N, Bachmann M, Maisey S, Shekelle P, Breeze E, Marmot M, et al. Self reported receipt of care consistent with 32 quality indicators: national population survey of adults aged 50 or more in England. *British Medical Journal* 2008;337:a957.
61. Broadbent J, Maisey S, Holland R, Steel N. Recorded quality of primary care for osteoarthritis: an observational study. *British Journal of General Practice* 2008;58(557):839-43.
62. Porcheret M, Jordan K, Croft P, Primary Care Rheumatology Society. Treatment of knee pain in older adults in primary care: development of an evidence-based model of care. *Rheumatology (Oxford)* 2007;46(4):638-48.
63. Dziedzic KS, Healey EL, Porcheret M, Ong B, Main CJ, Jordan KP, et al. Implementing the NICE osteoarthritis guidelines: a mixed methods study and cluster

randomised trial of a model osteoarthritis consultation in primary care - the Management of OsteoArthritis In Consultations (MOSAICS) study protocol. *Implementation Science* 2014;27:95.

64. Haywood RA, Porcheret M, Mallen CD, Thomas E. Recruiting patients and collecting data for an observational study using computerised record pop-up prompts: the PROGRES study. Primary Health Care Research & Development. *Primary Health Care Research & Development* 2013;14(1):21-8.

65. Good Medical Practice (2013). Available at: [http://www.gmc-uk.org/guidance/good\\_medical\\_practice/contents.asp](http://www.gmc-uk.org/guidance/good_medical_practice/contents.asp). Accessed 01/07/2014.

66. Revalidation section of GMC website. Available at: <http://www.gmc-uk.org/doctors/revalidation.asp>. Accessed 01/07/2014.

67. Royal College of General Practitioners curriculum 2010, 1 The Core Curriculum Statement, Being a General Practitioner. Available at: <http://www.rcgp.org.uk/gp-training-and-exams/~media/Files/GP-training-and-exams/Curriculum-2012/RCGP-Curriculum-1-Being-a-GP.ashx>. Accessed 01/07/2014.

68. Royal College of General Practitioners curriculum 2010, 2.04 The Contextual Statement on Enhancing Professional Knowledge. Available at: <http://www.rcgp.org.uk/gp-training-and-exams/~media/Files/GP-training-and-exams/Curriculum-2012/RCGP-Curriculum-2-04-Enhancing-Professional-Knowledge.ashx>. Accessed 01/07/2014.

69. Sackett DL, Haynes RB, Guyatt GH, Tugwell P. *Clinical Epidemiology A Basic Science for Clinical medicine*. 2nd ed. Philadelphia: Lippincott Williams and Wilkins; 1991.
70. Glasziou P, Del Mar C, Salisbury J. *Evidence-Based Practice Workbook*. 2nd Edition ed. London: BMJ Books; 2007.
71. Scullard P, Abdelhamid A, Steel N, Qureshi N. Does the evidence referenced in NICE guidelines reflect a primary care population? *British Journal of General Practice* 2011;61(584):e112-7.
72. Huis A, van Achterberg T, de Bruin M, Grol R, Schoonhoven L, Hulscher M. A systematic review of hand hygiene improvement strategies: a behavioural approach. *Implementation Science* 2012;7(1):92.
73. Trinder P, Rajaratnam G, Lewis M, Croft P. Prophylactic aspirin use in the adult general population. *Journal of Public Health Medicine* 2003;25(4):377-80.
74. NICE technology appraisals [TA138] Inhaled corticosteroids for the treatment of chronic asthma in adults and in children aged 12 years and over. Available at: <http://www.nice.org.uk/guidance/TA138/chapter/1-Guidance>. Accessed 01/07/2014.
75. NICE guidelines [CG144] Venous thromboembolic diseases: the management of venous thromboembolic diseases and the role of thrombophilia testing. Available at: <http://www.nice.org.uk/guidance/CG144/chapter/1-Guidance>. Accessed 01/07/2014.

76. Greenhalgh T, Robert G, Macfarlane F, Bate P, Kyriakidou O. Diffusion of innovations in service organizations: systematic review and recommendations. *Milbank Quarterly* 2004;82(4):581-629.
77. Rogers EM. *Diffusion of Innovations*. 3rd edition ed. New York: The Free Press; 1983.
78. Giguère A, Légaré F, Grimshaw J, Turcotte S, Fiander M, Grudniewicz A, et al. Printed educational materials: effects on professional practice and healthcare outcomes. *Cochrane Database of Systematic Reviews* 2012;(10):Art. No.: CD004398. DOI: 10.1002/14651858.CD004398.pub3.
79. Grimshaw JM, Thomas RE, MacLennan G, Fraser C, Ramsay CR, Vale L, et al. Effectiveness and efficiency of guideline dissemination and implementation strategies. *Health Technology Assessments* 2004;8(6):1-72.
80. Grol R, Wensing M, Eccles M. *Improving Patient Care: The Implementation of Change in Clinical Practice*. Edinburgh: Elsevier; 2005
81. Shekelle PG, Woolf SH, Eccles M, Grimshaw J. Clinical guidelines: developing guidelines. *British Medical Journal* 1999;318(7183):593-6.
82. Clinical Guidelines – Numerical List. Available at: <http://www.sign.ac.uk/guidelines/published/numlist.html>. Accessed 03/02/2014.
83. Myocardial infarction (A) (replaced by CG48). Available at: <http://www.nice.org.uk/Guidance/A>. Accessed 01/07/2014.

84. Field MJ, Lohr KN. *Committee to Advise the Public Health Service on Clinical Practice Guidelines IoM: Clinical Practice Guidelines: Directions for a New Program*. Washington, D.C: The National Academies Press; 1990.
85. Brouwers MC, Kho ME, Browman GP, Burgers JS, Cluzeau F, Feder G, et al. AGREE II: advancing guideline development, reporting and evaluation in health care. *Journal Clinical Epidemiology* 2010;63:1308-11.
86. Eccles M, Grimshaw J, Shekelle P, Schunemann H, Woolf S. Developing clinical practice guidelines: target audiences, identifying topics for guidelines, guideline group composition and functioning and conflicts of interest. *Implementation Science* 2012;7(1):60.
87. Shekelle P, Woolf S, Grimshaw J, Schunemann H, Eccles M. Developing clinical practice guidelines: reviewing, reporting, and publishing guidelines; updating guidelines; and the emerging issues of enhancing guideline implementability and accounting for comorbid conditions in guideline development. *Implementation Science* 2012;7(1):62.
88. Woolf S, Schunemann H, Eccles M, Grimshaw J, Shekelle P. Developing clinical practice guidelines: types of evidence and outcomes; values and economics, synthesis, grading, and presentation and deriving recommendations. *Implementation Science* 2012;7(1):61.
89. Kryworuchko J, Stacey D, Bai N, Graham I. Twelve years of clinical practice guideline development, dissemination and evaluation in Canada (1994 to 2005). *Implementation Science* 2009;4(1):49.

90. GRADE guidelines - best practices using the GRADE framework. Available at:  
[http://www.gradeworkinggroup.org/publications/JCE\\_series.htm](http://www.gradeworkinggroup.org/publications/JCE_series.htm). Accessed 03/07/2014.
91. Forsetlund L, Bjorndal A, Rashidian A, Jamtvedt G, O'Brien MA, Wolf F, et al. Continuing education meetings and workshops: effects on professional practice and health care outcomes. *Cochrane Database Systematic Reviews* 2009; Apr 15;(2)(2):CD003030.
92. EPOC Taxonomy of professional and organisational interventions. Available at:  
<http://epoc.cochrane.org/epoc-author-resources>. Accessed 05/02/2014.
93. Pathman DE, Konrad TR, Freed GL, Freeman VA, Koch GG. The awareness-to-adherence model of the steps to clinical guideline compliance. The case of pediatric vaccine recommendations. *Medical Care* 1996;34(9):873-89.
94. Glasziou P. Jottings. *Evidence Based Medicine* 2005;10(1):4.
95. Oxford Dictionaries: Implement. Available at:  
<http://www.oxforddictionaries.com/definition/english/implement?q=implement>. Accessed 01/07/2014.
96. Eccles MP, Mittman BS. Welcome to Implementation Science. *Implementation Science* 2006;1:1.
97. Sheldon M. *Medical Audit in General Practice*. London: Royal College of General Practitioners; 1982.
98. Smith J. The National Centre for Clinical Audit: the first stage. *British Journal of Clinical Governance* 1996;1(1):3-4.

99. Ivers N, Jamtvedt G, Flottorp S, Young JM, Odgaard-Jensen J, French SD, et al. Audit and feedback: effects on professional practice and healthcare outcomes. *Cochrane Database Systematic Reviews* 2012; Jun 13;6:CD000259.
100. Flodgren G, Parmelli E, Doumit G, Gattellari M, O'Brien MA, Grimshaw J, et al. Local opinion leaders: effects on professional practice and health care outcomes. *Cochrane Database Systematic Reviews* 2011; Aug 10;(8)(8):CD000125.
101. O'Brien MA, Rogers S, Jamtvedt G, Oxman AD, Odgaard-Jensen J, Kristoffersen DT, et al. Educational outreach visits: effects on professional practice and health care outcomes. *Cochrane Database Systematic Reviews* 2007; Oct 17;(4)(4):CD000409.
102. Shojania KG, Jennings A, Mayhew A, Ramsay CR, Eccles MP, Grimshaw J. The effects of on-screen, point of care computer reminders on processes and outcomes of care. *Cochrane Database Systematic Reviews* 2009; Jul 8;(3)(3):CD001096.
103. Hrisos S, Eccles M, Francis J, Dickinson H, Kaner E, Beyer F, et al. Are there valid proxy measures of clinical behaviour? A systematic review. *Implementation Science* 2009;4(1):37.
104. Robertson N, Baker R, Hearnshaw H. Changing the clinical behavior of doctors: a psychological framework. *Quality in Health Care* 1996;5(1):51-4.
105. Michie S, Johnston M, Abraham C, Lawton R, Parker D, Walker A, et al. Making psychological theory useful for implementing evidence based practice: a consensus approach. *Quality and Safety in Health Care* 2005;14(1):26-33.



106. Eccles M, Grimshaw J, Walker A, Johnston M, Pitts N. Changing the behavior of healthcare professionals: the use of theory in promoting the uptake of research findings. *Journal of Clinical Epidemiology* 2005;58(2):107-12.
107. ICEBeRG. Designing theoretically-informed implementation interventions. *Implementation Science* 2006;1:4.
108. Ajzen I. The theory of planned behaviour. *Organisational Behaviour and Human Decision Process* 1991;50:179-211.
109. Bandura A. *Social Foundations of Thought and Action: a Social Cognitive Theory*. Englewood Cliffs, N. J.: Prentice-Hall; 1986.
110. Michie S, Richardson M, Johnston M, Abraham C, Francis J, Hardeman W, et al. The Behavior Change Technique Taxonomy (v1) of 93 Hierarchically Clustered Techniques: Building an International Consensus for the Reporting of Behavior Change Interventions. *Annals of Behavioral Medicine* 2013;46(1):81-95.
111. Craig P, Dieppe P, Macintyre S, Michie S, Nazareth I, Petticrew M. *Developing and evaluating complex interventions: new guidance*. London: Medical Research Council; 2006.
112. Bhattacharyya O, Reeves S, Garfinkel S, Zwarenstein M. Designing theoretically-informed implementation interventions: Fine in theory, but evidence of effectiveness in practice is needed. *Implementation Science* 2006;1(1):5.

113. Fishbein M, Triandis H, Kanfer F. Factors influencing behaviour and behaviour change. In: Baum A, Revenson T, Singer J, editors. *Handbook of Health Psychology*.; 2001. p. 3-17.
114. Liu B, Almaawiy U, Moore JE, Chan W, Straus SE, MOVE ON Team. Evaluation of a multisite educational intervention to improve mobilization of older patients in hospital: protocol for mobilization of vulnerable elders in Ontario (MOVE ON). *Implementation Science* 2013;8:76.
115. Curran JA, Brehaut J, Patey AM, Osmond M, Stiell I, Grimshaw JM. Understanding the Canadian adult CT head rule trial: use of the theoretical domains framework for process evaluation. *Implementation Science* 2013;8:25.
116. Johnston KN, Young M, Grimmer-Somers KA, Antic R, Frith PA. Why are some evidence-based care recommendations in chronic obstructive pulmonary disease better implemented than others? Perspectives of medical practitioners. *International Journal of Chronic Obstructive Pulmonary Disease* 2011;6:659-67.
117. Francis JJ, O'Connor D, Curran J. Theories of behaviour change synthesised into a set of theoretical groupings: introducing a thematic series on the theoretical domains framework. *Implementation Science* 2012;7:35.
118. French SD, Green SE, O'Connor DA, McKenzie JE, Francis JJ, Michie S, et al. Developing theory-informed behaviour change interventions to implement evidence into practice: a systematic approach using the Theoretical Domains Framework. *Implementation Science* 2012;7:38.

119. Michie S, Johnston M, Francis J, Hardeman W, Eccles M. From Theory to Intervention: Mapping Theoretically Derived Behavioural Determinants to Behaviour Change Techniques. *Applied Psychology: An International Review* 2008;57(4):660-80.
120. Amemori M, Korhonen T, Kinnunen T, Michie S, Murtomaa H. Enhancing implementation of tobacco use prevention and cessation counselling guideline among dental providers: a cluster randomised controlled trial. *Implementation Science* 2011;6:13,5908-6-13.
121. Kennedy A, Rogers A, Bower P. Support for self care for patients with chronic disease. *British Medical Journal* 2007;335(7627):968-70.
122. Mead N, Bower P. Patient-centredness: a conceptual framework and review of the empirical literature. *Social Science and Medicine* 2000;51(7):1087-110.
123. Byrne P, Long B. *Doctors Talking to Patients*. London: HMSO; 1976.
124. Spence J. *The purpose and practice of medicine*. Oxford: Oxford University Press; 1960.
125. Silverman J, Kurt S, Draper J. *Skills for Communicating with Patients*. 2nd ed. Oxford: Radcliffe Publishing; 2005.
126. Pendleton D, Schofield T, Tate P, Havelock P. *The Consultation: An Approach to Learning and Teaching*. Oxford: Oxford University Press; 1984.
127. Neighbour R. *The Inner Consultation*. 2nd Edition ed. Oxford: Radcliffe Publishing Ltd; 2004.

128. Gask L, Usherwood T. ABC of psychological medicine. The consultation. *British Medical Journal* 2002;324(7353):1567-9.
129. Fraser A, Skelton J, Slowther A, Joshi A, Wilkie V. *Royal College of General Practitioners Curriculum 2010. 2.01 The Contextual Statement on the GP Consultation in Practice*. London: The Royal College of General Prationers; 2013.
130. Murphy MK, Black NA, Lamping DL, McKee CM, Sanderson CF, Askham J, et al. Consensus development methods, and their use in clinical guideline development. *Health Technology Assessments* 1998;2(3):1-88.
131. Kadam UT, Jordan K, Croft PR. A comparison of two consensus methods for classifying morbidities in a single professional group showed the same outcomes. *Journal of Clinical Epidemiology* 2006;59(11):1169-73.
132. Diamond I, Grant R, Feldman B, Pencharz P, Ling S, Moore A, et al. Defining consensus: A systematic review recommends methodologic criteria for reporting of Delphi studies. *Journal of Clinical Epidemiology* 2014;67(4):401-9.
133. What is an expert by experience? Available at: <http://www.adam-europe.eu/prj/1871/prd/10/1/Definition%20expert%20by%20experience.pdf>. Accessed 01/12/2014.
134. Komorita S. Attitude Content, Intensity, and the Neutral Point on a Likert Scale. *Journal Social Psychology* 1963;61:327-34.
135. Foster NE, Dziedzic KS, van der Windt DAWM, Fritz JM, Hay EM. Research priorities for non-pharmacological therapies for common musculoskeletal problems:

nationally and internationally agreed recommendations. *BMC Musculoskeletal Disorders* 2009;10:3.

136. Myers H, Thomas E, Dziedzic K. What are the important components of the clinical assessment of hand problems in older adults in primary care? Results of a Delphi study. *BMC Musculoskeletal Disorders* 2010;11:178.

137. Chassany O, Boureau F, Liard F, Bertin P, Serrie A, Ferran P, et al. Effects of training on general practitioners' management of pain in osteoarthritis: a randomized multicenter study. *Journal of Rheumatology* 2006;33(9):1827-34.

138. Ravaud P, Flipo RM, Boutron I, Roy C, Mahmoudi A, Giraudeau B, et al. ARTIST (osteoarthritis intervention standardized) study of standardised consultation versus usual care for patients with osteoarthritis of the knee in primary care in France: pragmatic randomised controlled trial. *British Medical Journal* 2009;338:b421.

139. Bickley L, Szilagyi P. *Bate's Guide to Physical Examination and History Taking*. 10th ed. Philadelphia: Wolters Kluwer Health; 2009.

140. Swash M, Glynn M. *Hutchinson's Clinical Methods*. 22nd ed. London: Saunders Elsevier; 2007.

141. Schroeder K. *The 10-Minute Clinical Assessment*. 1st ed. Chichester: Wiley-Blackwell; 2010.

142. Dieppe P. Developments in osteoarthritis. *Rheumatology* 2011;50(2):245-7.

143. Dziedzic KS, Hill JC, Porcheret M, Croft PR. New models for primary care are needed for osteoarthritis. *Physical Therapy* 2009;89(12):1371-8.
144. Calnan M, Wainwright D, O'Neill C, Winterbottom A, Watkins C. Making sense of aches and pains. *Family Practice* 2006;23:91-105.
145. Mead N, Bower P. Measuring patient-centredness: a comparison of three observation-based instruments. *Patient Education and Counselling* 2000;39(1):71-80.
146. Creavin ST, Creavin AL, Mallen CD. Do GPs respond to postal questionnaire surveys? A comprehensive review of primary care literature. *Family Practice* 2011;28(4):461-467.
147. Brookfield S. *Understanding and Facilitating Adult Learning: A Comprehensive Analysis of Principles and Effective Practices*. 1st ed. Bury St Edmunds: Open University Press; 1986.
148. Cochrane Effective Practice and Organisation of Care Group. Available at: <http://epoc.cochrane.org/>. Accessed 09/07, 2011.
149. Worrall P, French T, Ashton L. *Advanced Consulting in Family Medicine - the consultation expertise model*. Oxford: Radcliffe Publishing; 2009.
150. Rollnick S, Kinnersley P, Butler C. Context-bound communication skills training: development of a new method. *Medical Education* 2002;36(4):377-83.

151. Rollnick S, Seale C, Kinnersley P, Rees M, Butler C, Hood K. Developing a new line of patter: can doctors change their consultations for sore throat? *Medical Education* 2002;36(7):678-81.
152. Cals JW, Scheppers NA, Hopstaken RM, Hood K, Dinant GJ, et al. Evidence based management of acute bronchitis; sustained competence of enhanced communication skills acquisition in general practice. *Patient Education and Counselling* 2007;68(3):270-8.
153. Yardley L, Douglas E, Anthierens S, Tonkin-Crine S, O'Reilly G, Stuart B, et al. Evaluation of a web-based intervention to reduce antibiotic prescribing for LRTI in six European countries: quantitative process analysis of the GRACE/INTRO randomised controlled trial. *Implementation Science* 2013;8(1):134.
154. Little P, Stuart B, Francis N, Douglas E, Tonkin-Crine S, Anthierens S, et al. The effect of web-based training in communication skills and an interactive patient booklet and the use of a CRP point of care test in acute respiratory tract infection (RTI): a multi-national cluster randomised factorial controlled trial. *Lancet* 2013;;1175-82.
155. Bekkers MJ, Simpson SA, Dunstan F, Hood K, Hare M, Evans J, et al. Enhancing the quality of antibiotic prescribing in primary care: qualitative evaluation of a blended learning intervention. *BMC Family Practice* 2010;11:34.
156. Simpson S, Butler C, Hood K, Cohen D, Dunstan F, Evans M, et al. Stemming the Tide of Antibiotic Resistance (STAR): A protocol for a trial of a complex intervention addressing the 'why' and 'how' of appropriate antibiotic prescribing in general practice. *BMC Family Practice* 2009;10(1):20.

157. Kurtz S, Silverman J, Draper J. *Teaching and Learning Communication Skills in Medicine*. 2nd Edition ed. Abingdon: Radcliffe Publishing Ltd; 2005.
158. Wagner EH. Chronic disease management: what will it take to improve care for chronic illness? *Effective Clinical Practice* 1998;1(1):2-4.
159. Rollnick S, Miller W, Burton C. *Motivational interviewing in health care: helping patients change behaviour*. illustrated ed. New York US: Guilford Press; 2007.
160. The Improved Clinical Effectiveness through Behavioural Research Group. Designing theoretically-informed implementation interventions. *Implementation Science* 2006;1(1):4.
161. Colquhoun HL, Brehaut JC, Sales A, Ivers N, Grimshaw J, Michie S, et al. A systematic review of the use of theory in randomized controlled trials of audit and feedback. *Implementation Science* 2013;8:66.
162. Treweek S. Complex interventions and the chamber of secrets: understanding why they work and why they do not. *Journal Royal Society of Medicine* 2005;98(12):553.
163. Craig P, Dieppe P, Macintyre S, Michie S, Nazareth I, Petticrew M, et al. Developing and evaluating complex interventions: the new Medical Research Council guidance. *British Medical Journal* 2008;337:a1655.
164. Baker R, Camosso-Stefinovic J, Gillies C, Shaw EJ, Cheater F, Flottorp S. Tailored interventions to overcome identified barriers to change: effects on professional practice and health care outcomes. *Cochrane Database Systematic Reviews* 2010;(3).



165. Flottorp S, Oxman A, Krause J, Musila N, Wensing M, Goddycki-Cwirko M, et al. A checklist for identifying determinants of practice: A systematic review and synthesis of frameworks and taxonomies of factors that prevent or enable improvements in healthcare professional practice. *Implementation Science* 2013;8(1):35.
166. Krause J, Van Lieshout J, Klomp R, Huntink E, Aakhus E, Flottorp S, et al. Identifying determinants of care for tailoring implementation in chronic diseases: an evaluation of different methods. *Implementation Science* 2014;9(1):102.
167. McKenzie J, French S, O'Connor D, Mortimer D, Browning C, Russell G, et al. Evidence-based care of older people with suspected cognitive impairment in general practice: protocol for the IRIS cluster randomised trial. *Implementation Science* 2013;8(1):91.
168. Hrisos S, Eccles M, Johnston M, Francis J, Kaner EFS, Steen N, et al. Developing the content of two behavioural interventions: Using theory-based interventions to promote GP management of upper respiratory tract infection without prescribing antibiotics. *BMC Health Services Research* 2008;8:11.
169. French SD, McKenzie JE, O'Connor DA, Grimshaw JM, Mortimer D, Francis JJ, et al. Evaluation of a theory-informed implementation intervention for the management of acute low back pain in general medical practice: the IMPLEMENT cluster randomised trial. *PLoS One* 2013;8(6):e65471.
170. Cane J, O'Connor D, Michie S. Validation of the theoretical domains framework for use in behaviour change and implementation research. *Implementation Science* 2012;7:37.

171. McSherry LA, Dombrowski SU, Francis JJ, Murphy J, Martin CM, O'Leary JJ, et al. 'It's a can of worms': understanding primary care practitioners' behaviours in relation to HPV using the theoretical domains framework. *Implementation Science* 2012;7:73.
172. Hammick M, Freeth D, Koppel I, Reeves S, Barr H. A best evidence systematic review of interprofessional education: BEME Guide no. 9. *Medical Teacher* 2007;29(8):735-51.
173. Yardley S, Dornan T. Kirkpatrick's levels and education 'evidence'. *Medical Education* 2012;46:97-106.
174. Bowling A, Ebrahim S. *Handbook of Health Research Methods. Investigation, measurement and analysis First edition.* ; 2005.
175. Curtis E, Drennan J. *Quantitative Health Research Issues and Methods.* Maidenhead: Open University Press; 2013.
176. Altman DG. *Practical statistics for medical research. 1st edition.* London: Chapman and Hall; 1991.
177. Hakkennes S, Green S. Measures for assessing practice change in medical practitioners. *Implementation Science* 2006;1(1):29.
178. Consultations for selected diagnoses and regional problems. Available at: <http://www.keele.ac.uk/media/keeleuniversity/ri/primarycare/bulletins/MusculoskeletalMatters2.pdf>. Accessed 16/07/2014.

179. McColl E, Thomas R. *The use and design of questionnaires*. London: The Royal College of General Practitioners; 2000.
180. Barrows HS. An overview of the uses of standardized patients for teaching and evaluating clinical skills. *AAMC. Academic Medicine* 1993;68(6):443.
181. Beullens J, Rethans JJ, Goedhuys J, Buntinx F. The use of standardized patients in research in general practice. *Family Practice* 1997;14(1):58-62.
182. Luck J. Using standardized patients to measure physicians' practice: validation study using audio recordings. *British Medical Journal* 2002;325:679-87.
183. Rethans JJ, Gorter S, Bokken L, Morrison L. Unannounced standardized patients in real practice: a systematic literature review. *Medical Education* 2007;41:537-49.
184. Burt J, Abel G, Elmore N, Campbell J, Roland M, Benson J, et al. Assessing communication quality of consultations in primary care: initial reliability of the Global Consultation Rating Scale, based on the Calgary-Cambridge Guide to the Medical Interview. *British Medical Journal Open* 2014;4(3).
185. Salmon P, Ring A, Humphris GM, Davies JC, Dowrick CF. Primary care consultations about medically unexplained symptoms: how do patients indicate what they want? *Journal General Internal Medicine* 2009;24(4):450-6.
186. Hardeman W, Lamming L, Kellar I, De Simoni A, Graffy J, Boase S, et al. Implementation of a nurse-led behaviour change intervention to support medication taking in type 2 diabetes: beyond hypothesised active ingredients (SAMS Consultation Study). *Implementation Science* 2014;9(1):70.

187. Ring A, Dowrick C, Humphris G, Salmon P. Do patients with unexplained physical symptoms pressurise general practitioners for somatic treatment? A qualitative study. *British Medical Journal* 2004;328(7447):1057.
188. Rethans JJ, Norcini JJ, Baron-Maldonado M, Blackmore D, Jolly BC, LaDuca T, et al. The relationship between competence and performance: implications for assessing practice performance. *Medical Education* 2002;36(10):901-9.
189. Rethans JJ, Sturmans F, Drop R, van der Vleuten C, Hobus P. Does competence of general practitioners predict their performance? Comparison between examination setting and actual practice. *British Medical Journal* 1991;303(6814):1377-80.
190. Bowling A. *Research Methods in Health Investigating health and health services*. 3rd Edition ed. Maidenhead: The Open University Press; 2010.
191. Salmon P, Dowrick CF, Ring A, Humphris GM. Voiced but unheard agendas: qualitative analysis of the psychosocial cues that patients with unexplained symptoms present to general practitioners. *British Journal of General Practice* 2004;54(500):171-6.
192. Blakeman T, Bower P, Reeves D, Chew-Graham C. Bringing self-management into clinical view: a qualitative study of long-term condition management in primary care consultations. *Chronic Illn* 2010;6(2):136-50.
193. Ring A, Dowrick CF, Humphris GM, Davies J, Salmon P. The somatising effect of clinical consultation: what patients and doctors say and do not say when patients present medically unexplained physical symptoms. *Social Science and Medicine* 2005;61(7):1505-15.

194. Roter D, Larson S. The Roter interaction analysis system (RIAS): utility and flexibility for analysis of medical interactions. *Patient Education and Counselling* 2002;46:243-51.
195. Veloski J, Tai S, Evans AS, Nash DB. Clinical Vignette-Based Surveys: A Tool for Assessing Physician Practice Variation. *American Journal of Medical Quality* 2005;20(3):151-7.
196. Peabody JW, Luck J, Glassman P, Dresselhaus TR, Lee M. Comparison of vignettes, standardized patients, and chart abstraction: a prospective validation study of 3 methods for measuring quality. *Journal of the American Medical Association* 2000;283:1715-22.
197. Bedson J, Jordan K, Croft PC. How do GPs use x rays to manage chronic knee pain? A case study. *Annals of the Rheumatic Disease* 2003;62:450-4.
198. Cottrell E, Roddy E, Foster NE. The attitudes, beliefs and behaviours of GPs regarding exercise for chronic knee pain: a systematic review. *BMC Family Practice* 2010;11:4,2296-11-4.
199. Holden MA, Nicholls EE, Hay EM, Foster NE. Physical therapists' use of therapeutic exercise for patients with clinical knee osteoarthritis in the United kingdom: in line with current recommendations?. *Physical Therapy* 2008;88(10):1109-21.
200. Bishop A, Foster NE, Thomas E, Hay EM. How does the self-reported clinical management of patients with low back pain relate to the attitudes and beliefs of health care practitioners? A survey of UK general practitioners and physiotherapists. *Pain* 2008;135(1-2):187-95.

201. Heneghan C, Perera R, Mant D, Glasziou P. Hypertension guideline recommendations in general practice: awareness, agreement, adoption, and adherence. *British Journal of General Practice* 2007;57(545):948-52.
202. Porcheret M, Grime J, Main C, Dziedzic K. Developing a model osteoarthritis consultation: a Delphi consensus exercise. *BMC Musculoskeletal Disorders* 2013;14:25.
203. Morden A, Jinks C, Ong BN. '...I've found once the weight had gone off, i've had a few twinges, but nothing like before'. Exploring weight and self-management of knee pain. *Musculoskeletal Care* 2014;12(2):63-73.
204. Jinks C, Ong B, O'Neill T. "Well, it's nobody's responsibility but my own." A qualitative study to explore views about the determinants of health and prevention of knee pain in older adults. *BMC Public Health* 2010;10(1):148.
205. Morden A, Jinks C, Bie Nio O. Lay models of self-management: how do people manage knee osteoarthritis in context? *Chronic Illness* 2011;7(3):185-200.
206. Morden A, Jinks C, Ong BN. Understanding Help Seeking for Chronic Joint Pain: Implications for Providing Supported Self-Management. *Quality in Health Research* 2014;24(7):957-68.
207. Hendry M, Williams NH, Markland D, Wilkinson C, Maddison P. Why should we exercise when our knees hurt? A qualitative study of primary care patients with osteoarthritis of the knee. *Family Practice* 2006;23(5):558-67.

208. Thew R, Worrall P. The selection and training of patient simulators for the assessment of consultation performance in simulated surgeries. *Education for General Practice* 1998;9(2):211-5.
209. Cottrell E, Roddy E, Rathod T, Thomas E, Porcheret M, Foster NE. Maximising response from GPs to questionnaire surveys: do length or incentives make a difference?. *BMC Medical Research Methodology* 2015;15(1):3.
210. Foster NE, Healey EL, Holden MA, Nicholls E, Whitehurst DG, Jowett S, et al. A multicentre, pragmatic, parallel group, randomised controlled trial to compare the clinical and cost-effectiveness of three physiotherapy-led exercise interventions for knee osteoarthritis in older adults: the BEEP trial protocol (ISRCTN: 93634563). *BMC Musculoskeletal Disorders* 2014;15:254.
211. Siegel S, Castellan N. *Nonparametric statistics for behavioural sciences*. 2nd edition ed. New York: McGraw-Hill Book Company; 1988.
212. de Vet H, Terwee C, Mokkink L, Knol D. *Measurement in Medicine A Practical Guide*. First Edition ed. Cambridge: Cambridge University Press; 2011.
213. Streiner D, Norman G. *Health Measurement Scales: A Practical Guide to Their Development and Use*. 3rd Edition ed. Oxford: Oxford University Press; 2003.
214. Miller WR, Rollnick S. *Motivational Interviewing; preparing people for change*, second edition. New York: Guildford Press; 2002.

215. Watson PW, McKinstry B. A systematic review of interventions to improve recall of medical advice in healthcare consultations. *Journal of the Royal Society of Medicine* 2009;102(6):235-43.
216. Finney A, Porcheret M, Grime J, Jordan KP, Handy J, Healey E, et al. Defining the content of an opportunistic osteoarthritis consultation with primary health care professionals: a Delphi consensus study. *Arthritis Care and Research* 2013;65(6):962-8.
217. Ryan S, Lillie K, Thwaites C, Adams J. 'What I want clinicians to know'--experiences of people with arthritis. *British Journal of Nursing* 2013;22(14):808-12.
218. Paskins Z, Sanders T, Hassell A. What influences patients with Osteoarthritis to consult their GP about their symptoms? A narrative review. *BMC Family Practice* 2013;14(1):195.
219. Paskins Z, Sanders T, Hassell AB. Comparison of patient experiences of the osteoarthritis consultation with GP attitudes and beliefs to OA: a narrative review. *BMC Family Practice* 2014;46,2296-15-46.
220. Osteras N, Garratt A, Grotle M, Natvig B, Kjekken I, Kvien TK, et al. Patient-reported quality of care for osteoarthritis: development and testing of the osteoarthritis quality indicator questionnaire. *Arthritis Care and Research* 2013;65(7):1043-51.
221. *An inquiry into patient centred care in the 21st century: implications for general practice and primary care*. London: The Royal College of General Practitioners; 2014.
222. Smink AJ, van dE, Vliet Vlieland T, Swierstra BA, Kortland JH, Bijlsma JW, et al. "Beating osteoARThritis": development of a stepped care strategy to optimize utilization



and timing of non-surgical treatment modalities for patients with hip or knee osteoarthritis. *Clinical Rheumatology* 2011;30:1623-9.

223. Cuperus N, Smink A, Bierma-Zeinstra S, Dekker J, Schers H, de Boer F, et al. Patient reported barriers and facilitators to using a self-management booklet for hip and knee osteoarthritis in primary care: results of a qualitative interview study. *BMC Family Practice* 2013;14(1):181.

224. French SD, Bennell KL, Nicolson PJ, Hodges PW, Dobson FL, Hinman RS. What do people with knee or hip osteoarthritis need to know? An international consensus list of essential statements for osteoarthritis. *Arthritis Care and Research* 2014;67(6):809-816.

225. Hart OR, Uden RM, McMullan JE, Ritchie MS, Williams TD, Smith BH. A study of National Health Service management of chronic osteoarthritis and low back pain. *Primary Health Care Research and Development* 2015;16(2):157-66.

226. Steel N, Hardcastle AC, Clark A, Mounce LT, Bachmann MO, Richards SH, et al. Self-reported quality of care for older adults from 2004 to 2011: a cohort study. *Age and Ageing* 2014;43(5):716-20.

227. Smink AJ, Dekker J, Vlieland TPMV, Swierstra BA, Kortland JH, et al. Health care use of patients with osteoarthritis of the hip or knee after implementation of a stepped care strategy: An observational study. *Arthritis Care & Research* 2014;66(6):817-827.

228. Smink AJ, Bierma-Zeinstra SM, Schers HJ, Swierstra BA, Kortland JH, et al. Non-surgical care in patients with hip or knee osteoarthritis is modestly consistent with a

stepped care strategy after its implementation. *International Journal for Quality in Health Care* 2014;26(4):490-8.

229. Edwards JJ, Jordan KP, Peat G, Bedson J, Croft PR, Hay EM, et al. Quality of care for OA: the effect of a point-of-care consultation recording template. *Rheumatology (Oxford)* 2015;54(5):844-53.

230. Roberts E, Delgado Nunes V, Buckner S, Latchem S, Constanti M, Miller P, et al. Paracetamol: not as safe as we thought? A systematic literature review of observational studies. *Annals of the Rheumatic Diseases* 2015 doi: 10.1136/annrheumdis-2014-206914. [Epub ahead of print];.

231. Mallen C, Hay E. Managing back pain and osteoarthritis without paracetamol. *British Medical Journal* 2015;350:h1352.

232. Wallace E, Salisbury C, Guthrie B, Lewis C, Fahey T, Smith SM. Managing patients with multimorbidity in primary care. *British Medical Journal* 2015;350:h176.

233. Salisbury C. Multimorbidity: time for action rather than words. *British Journal of General Practice* 2013;63(607):64-5.

234. Salisbury C. Multimorbidity: redesigning health care for people who use it. *Lancet* 2012;380(9836):7-9.

235. Dowrick CF, Ring A, Humphris GM, Salmon P. Normalisation of unexplained symptoms by general practitioners: a functional typology. *British Journal of General Practice* 2004;54(500):165-70.

236. Burton C, Lucassen P, Aamland A, Hartman TO. Explaining symptoms after negative tests: towards a rational explanation. *Journal of the Royal Society of Medicine* 2014; DOI: 10.1177/0141076814559082
237. Hassan H, Walsh DA. Central pain processing in osteoarthritis: implications for treatment. *Pain Management* 2014;4(1):45-56.
238. Rahman W, Dickenson AH. Emerging targets and therapeutic approaches for the treatment of osteoarthritis pain. *Current Opinion in Supportive and Palliative Care* 2015;9(2):124-30.
239. Dray A, Read SJ. Arthritis and pain. Future targets to control osteoarthritis pain. *Arthritis Research and Therapy* 2007;9(3):212.
240. Lacey RJ, Belcher J, Croft PR. Does life course socio-economic position influence chronic disabling pain in older adults? A general population study. *European Journal of Public Health* 2013;23(4):534-40.
241. Mallen CD, Peat G, Porcheret M, Croft P. The prognosis of joint pain in the older patient: general practitioners' views on discussing and estimating prognosis. *European Journal of General Practice* 2007;13(3):166-8.
242. Peat G, Thomas E, Handy J, Croft P. Social Networks and pain interference with daily activities in middle and old age. *Pain* 2004;112:397-405.

## Appendix 3.1 Ethics committee approval for consensus study

### South Manchester Research Ethics Committee

Room 181  
Gateway House  
Piccadilly South  
Manchester  
M60 7LP  
Tel: 0161 237 2268  
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Email: [cynthia.carter@northwest.nhs.uk](mailto:cynthia.carter@northwest.nhs.uk)

**Dr Mark E P Porcheret**  
**GP Research Fellow**  
**Arthritis Research Campaign National Primary Care Centre**  
**Primary Care Sciences**  
**Keele University**  
**ST5 5BG**

23 February 2009

Dear Dr Porcheret

**Full title of study:** Development of a model consultation for osteoarthritis:  
a consensus exercise.  
**REC reference number:** 09/H1003/2

The Research Ethics Committee reviewed the above application at the meeting held on 12 February 2009. Thank you for attending to discuss the study.

### **Ethical opinion**

The members of the Committee present gave a favourable ethical opinion of the above research on the basis described in the application form, protocol and supporting documentation, subject to the conditions specified below.

1. The Participant Information sheet should be on headed paper and include
  - a) that the study is being undertaken as part of a PhD programme
  - b) the name of the academic supervisor
  - c) the name of the REC who has reviewed the study
2. Please use the NRES standard Consent form (copy enclosed) to include
  - a) initial boxes at the end of each statement
  - b) the sections at the bottom of the page for signatures and who will have copies of the form

3. In 2<sup>nd</sup> paragraph of the appropriate invitation letters, to remove coercive language
  - a) delete 'very much hope that you are able' and insert 'would like you to'
  - b) delete 'experts' and insert 'people'
  - c) delete 'develop' and insert generate robust data on which to base'
  - d) proof read for typographical errors

### **Ethical review of research sites**

The Committee agreed that all sites in this study should be exempt from site-specific assessment (SSA). There is no need to submit the Site-Specific Information Form to any Research Ethics Committee. The favourable opinion for the study applies to all sites involved in the research.

### **Conditions of the favourable opinion**

The favourable opinion is subject to the following and additional conditions being met prior to the start of the study.

Management permission or approval must be obtained from each host organisation prior to the start of the study at the site concerned.

Management permission at NHS sites ("R&D approval") should be obtained from the relevant care organisation(s) in accordance with NHS research governance arrangements. Guidance on applying for NHS permission is available in the Integrated Research Application System or at <http://www.rdforum.nhs.uk>.

### **Approved documents**

The documents reviewed and approved at the meeting were:

<i>Document</i>	<i>Version</i>	<i>Date</i>	
Letter from Funder NIHR 2	1	01 August 2008	
Letter from Funder NIHR 1	1	01 March 2008	
Participant Consent Form: Prof Group Study 2	1	05 December 2008	
Participant Consent Form: Lay Group Study 2	1	05 December 2008	
Participant Consent Form: GP Group Study 1	1	05 December 2008	
Participant Consent Form: Lay Group Study 1	1	05 December 2008	
Participant Information Sheet: Professional Expert Group	1	19 November 2008	
Participant Information Sheet: Lay Expert Group	1	19 November 2008	

Interview Schedules/Topic Guides	1	06 January 2009	
Letter from Sponsor	1	22 December 2008	
Summary/Synopsis	1	06 January 2009	
Covering Letter	1	06 January 2009	
Protocol	1	12 December 2008	
Investigator CV		06 January 2009	
Application	2.0	19 December 2008	
Questionnaire: Specimen Consensus	1	12 December 2008	
Letter of invitation	1 - GP Group Study 1 round 2 reminder	05 December 2008	
Letter of invitation	1 - GP Group Study 1 round 2	05 December 2008	
Letter of invitation	1 - GP Group Study 1 1st reminder	05 December 2008	
Letter of invitation to participant	1 - GP Group Study 1	05 December 2008	
Letter of invitation	1 - GP Group Study 2 round 2 reminder	05 December 2008	
Letter of invitation	1 - GP Group Study 2 round 2	05 December 2008	
Letter of invitation	1 - GP Group Study 2 1st reminder	05 December 2008	
Letter of invitation to participant	1 - GP Group Study 2	05 December 2008	
Letter of invitation	1 - Lay Group Study 1 round 2 reminder	05 December 2008	
Letter of invitation	1 - Lay Group Study 1 - round 2	05 December 2008	
Letter of invitation	1 - Lay Group Study 1 - 2nd reminder	05 December 2008	
Letter of invitation	1 - Lay Group Study 1 2nd invitation	05 December 2008	
Letter of invitation to participant	1 - Lay Group Study 1	05 December 2008	
Letter of invitation	1 - Lay Group Study 2 round 2 reminder	05 December 2008	
Letter of invitation	1 - Lay Group Study 2 round 2	05 December 2008	
Letter of invitation	1 - Lay Group Study 2 1st reminder	05 December 2008	
Letter of invitation to participant	1 - Lay Group Study 2	05 December 2008	
Letter of invitation	1- AHP/Nurse/Pharmacist Group Study 2 round 2 reminder	05 December 2008	

Letter of invitation	1 - AHP/Nurse/Pharmacist Group Study 2 round 2	05 December 2008	
Letter of invitation	1 - AHP/Nurse/Pharmacist Group Study 2 1st reminder	05 December 2008	
Letter of invitation to participant	1 - AHP/Nurse/Pharmacist Group Study 2	05 December 2008	
Peer Review	Reviewers' Reports 1 to 9	30 November 2008	

### **Membership of the Committee**

The members of the Ethics Committee who were present at the meeting are listed on the attached sheet.

### **Statement of compliance**

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees (July 2001) and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

### **After ethical review**

Now that you have completed the application process please visit the National Research Ethics Website > After Review

You are invited to give your view of the service that you have received from the National Research Ethics Service and the application procedure. If you wish to make your views known please use the feedback form available on the website.

The attached document "After ethical review – guidance for researchers" gives detailed guidance on reporting requirements for studies with a favourable opinion, including:

- Notifying substantial amendments
- Progress and safety reports
- Notifying the end of the study

The NRES website also provides guidance on these topics, which is updated in the light of changes in reporting requirements or procedures.

We would also like to inform you that we consult regularly with stakeholders to improve our service. If you would like to join our Reference Group please email [referencegroup@nres.npsa.nhs.uk](mailto:referencegroup@nres.npsa.nhs.uk).

**09/H1003/2**

**Please quote this number on all correspondence**

With the Committee's best wishes for the success of this project

Yours sincerely

**Dr Philip G Haji-Michael**  
**Chair**

Enclosures : List of names and professions of members who were present at the meeting  
 "After ethical review – guidance for researchers" SL-AR2

Copy to: Ms Rhian Hughes, arc National Primary Care Centre, Keele University  
 Ms Nemonie Marriott, R&D office for NHS Stoke on Trent

**South Manchester Research Ethics Committee**  
**Attendance at Committee meeting on 12 February 2009**

**Committee Members:**

<i>Name</i>	<i>Profession</i>	<i>Present</i>	<i>Notes</i>	
Miss Elizabeth Arkell	Pharmacist	Yes		
Dr Anne Armstrong	Consultant Medical Oncologist	Yes		
Mr John Belcher	Alternate Vice Chair	Yes		
Dr Susan Davidson	Consultant and Honorary SL in Clinical Oncology	Yes		
Dr Philip G Haji-Michael	Consultant in Anaesthesia & Intensive Care	Yes		
Mr Richard Hovey	Business Analyst	Yes		
Mr Thomas Jones	Occupational Psychologist	Yes		
Dr Jai Kulkarni	Consultant, Rehabilitation Medicine	Yes		
Mrs Valerie Moffat	Lay Member	Yes		
Mr Derek Pritchard	Lay Member	Yes		
Mr David Ryder	Medical Statistician	Yes		
Mrs Bridget Simpson	Research Nurse	Yes		
Mrs Hilary Stratton-Powell	Practice Educator	No		
Dr Ann Wakefield	Senior Lecturer (Vice Chair)	Yes		



Mr Darren Walter	Clinical Director/Consultant in Emergency Medicine	Yes		
Mrs Dorothy Wright	Lay Member	Yes		

**Also in attendance:**

<i>Name</i>	<i>Position (or reason for attending)</i>	
Ms Cynthia Carter	REC Co-ordinator	
Miss Eleanor Thomas	NRES Manager	



## **Appendix 3.2 Initial list of statements for consensus exercise**

### **Initiating the consultation**

1. The GP should encourage the patient to tell their story, including the reason for coming today

### **Gathering information**

2. The GP should ask about the severity of the pain and limitation in function
3. The GP should ascertain the onset, periodicity and duration of the problem
4. The GP should ask about any previous problems with the joint
5. The GP should discover the impact of the problem on the patient's everyday life
6. The GP should ask about pain and impaired function in joints other than the index joint(s)
7. The GP should find out the patient's ideas, concerns and feelings about the problem, and their expectations of the consultation.
8. An exploration of the patient's ideas should include their view of the cause of the problem and what is going on in their body to produce it (using the patient's description of the problem)
9. The GP should enquire about what the patient has tried to alleviate the problem, such as treatments (pharmacological and non-pharmacological), home remedies and lifestyle changes, and what they are currently doing/using
10. The GP should ask about "red flag" conditions in the index joint(s), such as a history of trauma, redness, swelling and morning stiffness, and systemic symptoms such as fever or weight loss
11. The patient's mood should be assessed, by active listening, responding to non-verbal cues and, if needed, formal questions to detect anxiety and depression

### **Physical examination**

12. The GP should examine the index joint(s) for; evidence of OA / range of movement / muscle strength / functional activity
13. The GP should examine other joints for evidence of OA

### **Explanation and planning**

#### *Information giving*

14. The GP should give an brief explanation of OA, which should include;
  - the name (with care being taken to correct common misunderstandings about the terms "wear and tear", "degeneration" and "osteoarthritis")
  - an explanation of the aetiology of the condition (not just an inevitable consequence of ageing, due to the interplay of genetics / ageing / joint laxity or malalignment / muscle weakness / obesity / occupational or recreational usage)

- a realistic and positive view of prognosis, treatment (that something can be done / effective treatments outline in NICE OA guidance) and self-management
15. The GP should tailor the explanation to the patient's ideas, concerns, expectations and feelings of the problem presented
  16. The GP should endorse the patient's role in the management of their own condition and that the primary role of the primary healthcare team (PHCT) is to support and guide self-management
  17. The GP should give a positive view of treatment which should reflect the NICE recommendations

AT THIS POINT THE GP INTRODUCES THE OA GUIDEBOOK AND OFFERS THE PATIENT A COPY

18. The GP shows the patient, and annotates if needed, relevant sections of the OA Guidebook that deal with issues which were identified as being of particular interest to the patient in the earlier part of the consultation
19. The GP should explore the patient's understanding of the information given, and their reaction / beliefs / feelings about it
20. The GP should ask if the patient has any unanswered questions or any other information needs

#### *Management plan*

21. The GP should ask about the patient's views / preferences / prior use / acceptability of any treatments they have already tried for their joint problem
22. In particular the GP should ask about the patient's attitude to exercise and their prior experience of exercise (care should be taken with the use of language as exercise is not always perceived as meaning any or all physical activity but as relating to specific "exercises")
23. The GP should suggest, to all patients, that the patient considers the use of NICE core treatments and indicates briefly the options: strengthening exercises, fitness training and, if relevant, dietary changes to lose weight
24. The GP explains that these are two areas that can be considered in more detail at the review appointment (MOAC2) but indicates relevant sections of the guidebook which deal with exercise and weight loss, gives simple and brief advice and responds to any queries from the patient
25. The GP should discuss the need for analgesia, their prior use (especially enquiring as to whether adequate doses were used and if any side effects experienced), and uses the NICE treatment recommendations to guide the discussion with the patient
26. The GP should discuss the risks and benefits of analgesics, in particular those of oral non-steroidal anti-inflammatory drugs, using visual aids if needed

27. The GP should consider with the patient other adjunct treatment recommended by the NICE OA guidance
28. The GP should consider appropriate referral to members of the extended PHCT e.g. physiotherapist, occupational therapist, podiatrist, social services, community pharmacist and district nursing team
29. The GP should consider referral to rheumatology or orthopaedics if red flag symptoms are present, the diagnosis is unclear, if there is persistent pain or disability despite the use of NICE conservative treatments
30. The GP should consider referral in patients **presenting** with established/prolonged severe pain, and/or severe functional limitation, for consideration of joint replacement
31. The GP should, with the patient, formulate a guided self-management plan which will enable the patient to control their pain, minimise disability and prevent progression

### **Closing the consultation**

32. The GP summarises the management plan and re-checks that it is acceptable to the patient
33. The GP should make it clear to the patient when and how to re-consult
34. The GP should direct the patient to make a follow up appointment for a formal review (MOAC2)

### **Appendix 3.3 Presentation for Arthritis Care advisory group meeting**


**Arthritis Research Campaign  
National Primary Care Centre**

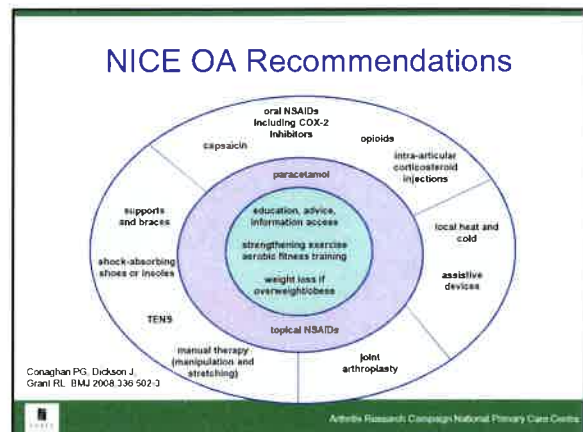

**Model OA consultation (MOAC)  
consensus exercise**

**Krysia Dziedzic Janet Grime  
Mark Porcheret**





Arthritis Research Campaign National Primary Care Centre  
 National Institute for Health Research

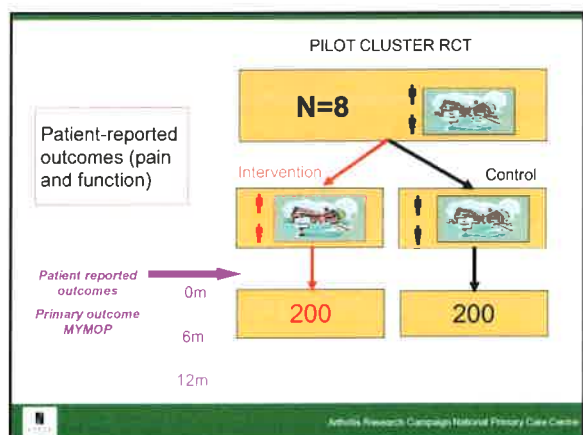
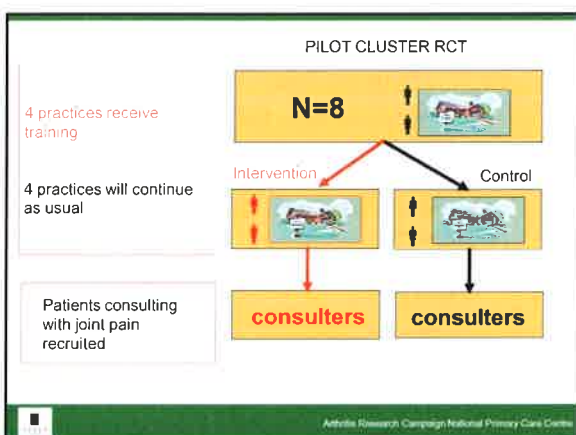
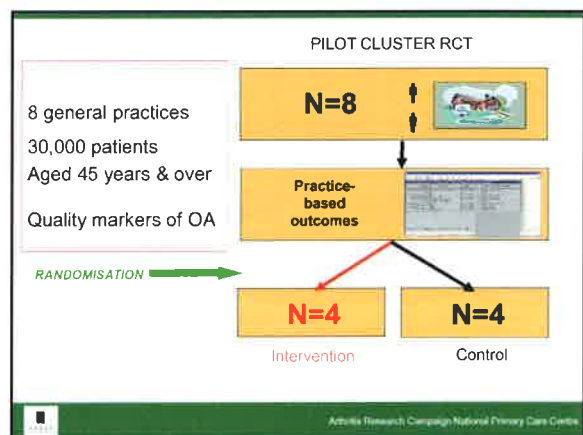


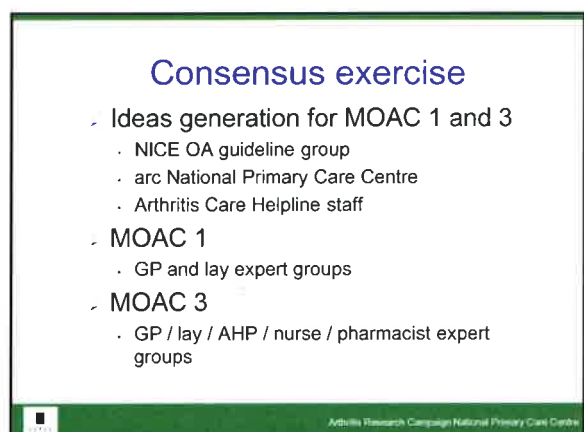
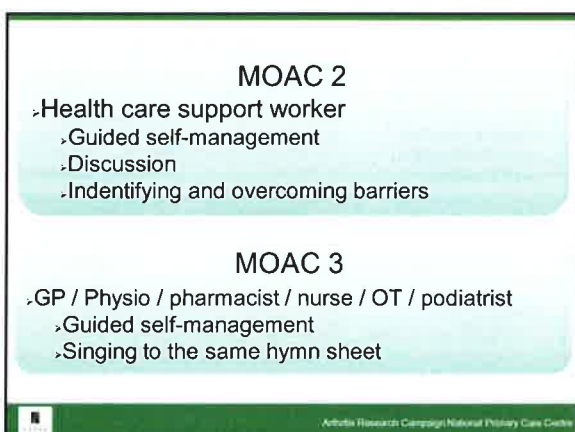
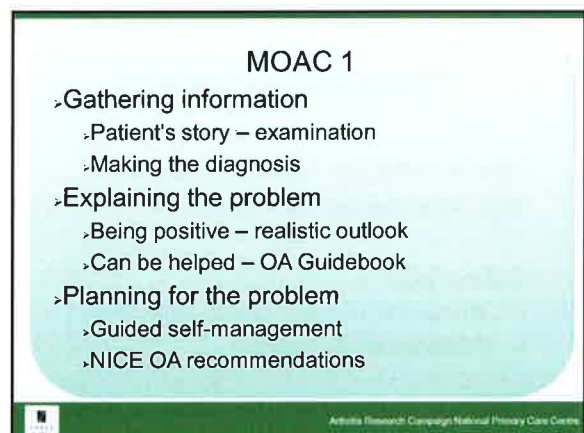
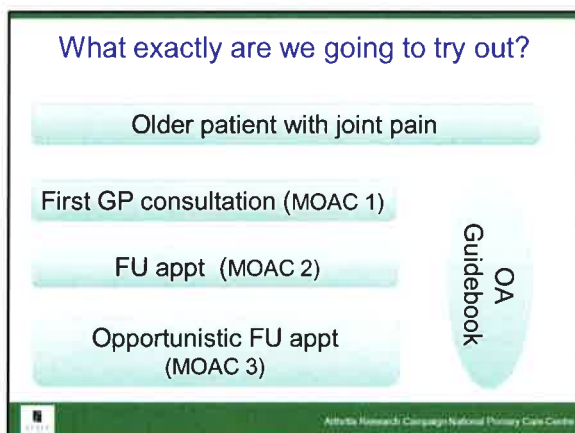
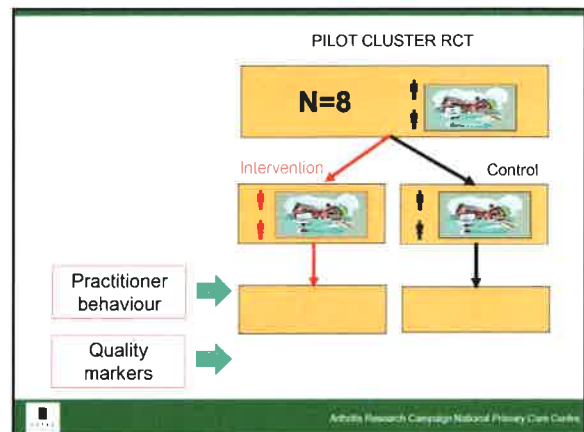
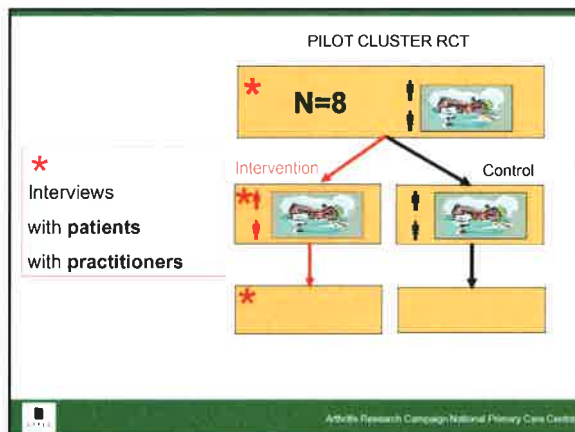
## Objectives and design

How to implement NICE in practice?  
Will it improve pain and function?

**Clinical trial**

- Guided-self management vs usual care
- Educational intervention









## MOAC -1 draft list of statements

### Scenario

A 63 year old woman attends her GP for the first time with a problem with her knee. The problem has worsened over the past few months and she has come to ask for help in coping with it.

## MOAC -1 draft list of statements

- Starting the consultation

## MOAC -1 draft list of statements

- Gathering information

## MOAC -1 draft list of statements

- Physical examination

## MOAC -1 draft list of statements

- Explanation – information giving

## **MOAC -1 draft list of statements**

- Planning – management plan / guided self-management



Arthritis Research Campaign National Primary Care Centre

## **Appendix 3.4 Comments from ideas generation round on statements for consensus exercise**

## MOAC 1 Consensus exercise – revisions to statements after the ideas generation round and reasons why

Orig No.	Original statement	Revised statement or additional contextual information (bold)	Rv No.	Comments / rationale for change
		<b>Please note the statements are not intended to be used verbatim by the GP during the consultation, i.e. the wording is not prescriptive.</b>		Several comments were made about the wording of the statements being not suitable to be used verbatim by the GP – so this information was added to the beginning of the consensus exercise
1	The GP should encourage the patient to tell their story, including the reason for coming today	The GP encourages the patient to give a full account of the problem(s), including the reason for coming today	1	The Arthritis Care group felt “should” should be omitted from all the statements (as it has been for this and all the others). “Full account of the problem(s)” was felt to be better and more specific than “story”.
		<b>The following statements address what information could be gathered to assess the problem. However, some statements may not need to be “asked” if the information has already been discovered from the patient’s “story”. So, it is not intended that the GP would systematically address all the topics, nor address them in the order presented. They are the topics that a GP might need to address to gain further information.</b>		Comments were made that all the questions might not need to be asked – if the information already volunteered by the patient – and might need to be asked in a different order
2	The GP should ask about the severity of the pain and limitation in function	The GP takes a “pain history” to assess; i) the severity of the pain, ii) what makes it better or worse, iii) how it is affected by exercise / physical activity and, iv) whether night pain is present	3	It was felt there needed to be separate statements about pain / other symptoms and function - and that the first statement should refer to taking a pain history
		The GP assesses the degree of pain using a formal measure, such as rating the pain on a scale of 0 to 10	4	Comments were made that the degree of pain should be formally measured and so this statement was included
		The GP asks about other knee symptoms such as stiffness, locking and giving way	5	Comments were made about asking about symptoms other than pain – so this statement was separately included
		The GP asks about problems with mobility, such as walking, going up and down stairs, and getting in and out of a chair	6	Comments were made on the WHO classification of impairment and so it was decided to use it - [pain / other symptoms], activity limitation [mobility] and participation restriction [activities] - to structure the statements and so this statement and revised statement 8 were included
		The GP assesses the extent of mobility problems using a formal measure, such as a rating scale form 0 to 10	7	Comments were made about performing a formal measure of function
		The GP asks if, and how, the knee problem affects such activities as work, hobbies, sports and general leisure activities	8	WHO participation restriction statement
3	The GP should ascertain the onset, periodicity and duration of the problem	The GP finds out how long the patient has had the knee problem for and whether the problem comes and goes	2	It was felt this statement seemed the logical first statement and should be phrased in less medical language (Arthritis Care group)
4	The GP should ask about any previous problems with the joint	The GP asks about previous problems with the knee and about any previous injury / knee operations / injections	9	Comments were made that the scenario referred to the knee – and so knee not joint was used. Comments were made on enquiring about previous injury / surgical / invasive interventions – so these were added
5	The GP should discover the impact of the problem on the patient’s everyday life	Statement deleted		It was felt this had now been covered in the “WHO classification questions”
		The GP asks about a family history of joint disease	10	Comments were made that this had not been included

## MOAC 1 Consensus exercise – revisions to statements after the ideas generation round and reasons why

Orig No.	Original statement	Revised statement or additional contextual information (bold)	Rv No.	Comments / rationale for change
		The GP asks about jobs which may have affected / caused the knee problem, such as those involving a lot of kneeling (for example, carpet fitter, cleaner, joiner, electrician)	11	Comments were made that an occupational history should be taken
6	The GP should ask about pain and impaired function in joints other than the index joint(s)	The GP asks about problems with other joints, especially the “other knee” and the hips	12	“Index” was felt to be too technical – comments were made that with knee pain it was important to ask about the other knee and the hips, and to refer to problems – rather than pain / impaired function
7	The GP should find out the patient’s ideas, concerns and feelings about the problem, and their expectations of the consultation.	The GP enquires about the patient’s ideas, concerns, fears and feelings about the problem	13	Comments were made about asking about fears and so was added – the statement was split into two for clarity – it was felt it was referring to two separate concepts
		The GP asks what are the patient’s expectations of the consultation	14	
8	An exploration of the patient’s ideas should include their view of the cause of the problem and what is going on in their body to produce it (using the patient’s description of the problem)	Statement deleted		Comments were made that this was confusing and that it overlapped with 7, and was at a level of detail not needed in the consensus exercise
		The GP asks which problem, concerning the knee, is it most important for the patient and GP to jointly address, for example pain, stiffness or climbing the stairs	15	Comment was made that it can be helpful to find out the patient’s priority regarding the problem – so as to be able to focus on this
9	The GP should enquire about what the patient has tried to alleviate the problem, such as treatments (pharmacological and non-pharmacological), home remedies and lifestyle changes, and what they are currently doing/using	The GP enquires about <b>what</b> the patient has tried to help the problem, <b>how</b> they were used and <b>if</b> they were effective	16	Comments were made about ascertaining how an intervention was used, for example the dose of paracetamol used – query adequate – and whether the intervention(s) had been effective
		The GP asks about <b>who</b> the patient has seen, or asked for help from, about the problem	17	Comments were made on enquiring about who had been seen, as well as what had been tried
10	The GP should ask about “red flag” conditions in the index joint(s), such as a history of trauma, redness, swelling and morning stiffness, and systemic symptoms such as fever or weight loss	The GP asks about recent trauma, joint swelling or redness, morning stiffness, night pain and systemic symptoms such as fever or weight loss, which might suggest an alternative diagnosis to OA, such as a fracture, cancer, inflammatory or septic arthritis	18	Comment was made regarding the difference between “red flags” – needing urgent referral – and conditions that were other than OA, but that did not need an urgent referral – so the term red flag was dropped and reference was made to the specific symptoms / history and examples of possible alternative diagnoses given
11	The patient’s mood should be assessed, by active listening, responding to non-verbal cues and, if needed, formal questions to detect anxiety and depression	The GP assesses the patient’s mood for symptoms of anxiety or depression	19	Comments were made that formal screen for depression should be an option, so the statement was split in two – also the level of details given in the original statement was felt to be unnecessary
		The GP screens the patient for depression using a formal depression screening tool	20	
		The GP asks about other conditions, such as diabetes, heart or kidney disease, which might affect the management of the knee problem	21	Comments were made on asking about co-morbid conditions – and though problem available to the GP from the patient record added for consideration
		The GP asks about adverse social circumstances, such as unemployment and financial hardship, which might affect the management of the knee problem	22	Comments were made on enquiring about socio-economic status

## MOAC 1 Consensus exercise – revisions to statements after the ideas generation round and reasons why

Orig No.	Original statement	Revised statement or additional contextual information (bold)	Rv No.	Comments / rationale for change
12	The GP should examine the index joint(s) for; evidence of OA / range of movement / muscle strength / functional activity	The GP assesses the knee problem by general observation of the patient's gait, mobility and footwear	23	Comments were made that the examination started when the patient walked through the door, or down the corridor, and that this should be referred to
		The GP examines the knee joint and surrounding tissues	24	A simpler form of the original statement
		The GP performs a specific test, such as a timed walk test, to assess function	25	Comment was made that a specific test of function could be performed by the GP
13	The GP should examine other joints for evidence of OA	The GP examines the other knee, hips and hands for signs of osteoarthritis	26	Comment was made that this was too vague – which joints – and a more specific statement was developed
		If not recently done, the GP measures weight and height to calculate the BMI	27	Several commentators suggested this
		The GP undertakes a full examination of the locomotor system	28	Comment was made that a full m/s exam should be performed
		<b>At this point the GP commonly “makes the diagnosis” and the following statements relate to a consultation in which osteoarthritis has been clinically diagnosed: persistent joint pain which is worse with use, in people age 45 years and over and in whom the diagnosis of an “alternative” condition is thought to be unlikely by the GP – a working diagnosis of OA.</b>		It was realised during the discussion of the ideas generation feedback that no information had been presented on how the GP would make the diagnosis of OA and - as not needing to be tested for agreement (as part of the NICE guidance) was added to the contextual information
		<b>For this section it is given that the GP will tailor any explanation or advice to the patient's specific problem and their ideas, concerns, fears, feelings about i) the problem and ii) OA and its treatment in general, and to their expectations of the consultation. And that the GP will use positive, but realistic, language, correct any misconceptions, challenge any negative views and reinforce positive ones.</b>		Some of these statements were a feature of some of the statements, which became repetitive, and it was decided that the study team did not want to seek consensus on them but take them as a given – and so added to contextual information
		The GP informs the patient that the most likely reason for the problem is OA and explains the reason(s) for coming to this diagnosis	29	Comment was made that there was not a statement about giving the diagnosis and the reasons why
		The GP enquires about the patient's views and understanding of OA	30	There was a discussion about asking about patient beliefs of OA – originally their views on the guidebook were asked in 19 – but it was pointed out they would not have read it at that stage – so it has been included after first giving the diagnosis [their prior beliefs about OA] and after the ORAL explanation of OA [34]

## MOAC 1 Consensus exercise – revisions to statements after the ideas generation round and reasons why

Orig No.	Original statement	Revised statement or additional contextual information (bold)	Rv No.	Comments / rationale for change
14	The GP should give an brief explanation of OA, which should include; 1 the name (with care being taken to correct common misunderstandings about the terms “wear and tear”, “degeneration” and “osteoarthritis”) 2 an explanation of the aetiology of the condition (not just an inevitable consequence of ageing, due to the interplay of genetics / ageing / joint laxity or malalignment / muscle weakness / obesity / occupational or recreational usage) 3 a realistic and positive view of prognosis, treatment (that something can be done / effective treatments outline in NICE OA guidance) and self-management	The GP gives a brief explanation of OA	31	It was felt that the level of detail was no needed for the consensus exercise that was given in the original statement – the detail would be dealt with in the trial training session – the study team simply wanted to know if the experts felt an explanation should be given either, as in this statement, briefly or, as in the next three statements on specific items or in more detail
		<b>The next three statements are possible additions, or for “33” a replacement, for the statement above</b>		Contextual information for the next three statements
		The GP, <b>in addition to “31”</b> , gives an explanation on the likely cause of OA	32	A separate statement for one of the bullet points in 14
		The GP, <b>in addition to “31”</b> , gives an explanation of the likely outcome for people with OA	33	Ditto
		The GP, <b>instead of “31”</b> , gives a full explanation of OA, covering the likely cause and outcome of the condition, using visual aids and written material as needed	34	An option to given a more expansive explanation
15	The GP should tailor the explanation to the patient’s ideas, concerns, expectations and feelings of the problem presented	Statement deleted		Now added to contextual information above
		The GP explores the patient’s understanding of the information given, and their reaction / beliefs / feelings about it	35	Transferred from 19 to ask about oral information given - not relevant after guidebook given to patient
		The GP asks if the patient has any unanswered questions or any other information needs	36	Transferred from 20 – not relevant after guidebook given to patient
16	The GP should endorse the patient’s role in the management of their own condition and that the primary role of the primary healthcare team (PHCT) is to support and guide self-management	The GP tells the patient that they are central to the management of their own condition: that self-management of OA is necessary and important	37	Comments were made that endorse was a “interesting” word to use – so dropped - and the statement needed to be split into two - as expressed two concepts
		The GP explains that the central role of the primary healthcare team (PHCT) in the management of OA is to support and guide self-management	38	As above
17	The GP should give a positive view of treatment which should reflect the NICE recommendations	The GP explains the approach to treatment of OA, which is based on national recommendations (the NICE OA Guideline), that of recommending core treatments to all with the use of adjuvant treatments (the outer rings) for persistent pain and/or disability (see figure above)	39	Comments were made that the original statement was “spinning” NICE and has been replaced with a neutral more detailed statement
		<b>At this point the GP introduces the OA Guidebook and offers the patient a copy. The GP explains that the guidebook is to help with the self-</b>		Additional contextual information added – on the use of the guidebook and introducing MOAC 2

## MOAC 1 Consensus exercise – revisions to statements after the ideas generation round and reasons why

Orig No.	Original statement	Revised statement or additional contextual information (bold)	Rv No.	Comments / rationale for change
		<b>management of OA and that a follow up appointment will be made regarding this (MOAC2).</b>		
18	The GP shows the patient, and annotates if needed, relevant sections of the OA Guidebook that deal with issues which were identified as being of particular interest to the patient in the earlier part of the consultation	The GP introduces the guidebook by simply handing it to the patient with the advice to read it.	40	It was felt 2 options needed to be given – simply handed hand / handed out and annotated
		The GP, <b>in addition to “40”</b> , shows the patient, and annotates if needed, relevant sections of the guidebook that deal with specific issues raised by the patient	41	
19	The GP should explore the patient’s understanding of the information given, and their reaction / beliefs / feelings about it	Statement deleted		Comments were made that the patient needed to have read the guidebook first and this statement has been moved to follow the giving of oral information by the GP
20	The GP should ask if the patient has any unanswered questions or any other information needs	Statement deleted		As above -
21	The GP should ask about the patient’s views / preferences / prior use / acceptability of any treatments they have already tried for their joint problem	The GP asks if the patient has any views / preferences for what treatment they might want to consider next, and, if they do, what they are	42	Comments were made that the patient might not have any views / that this has already be asked in original statement 9 – so the statement has been phrased to address what the patient might want to consider next
22	In particular the GP should ask about the patient’s attitude to exercise and their prior experience of exercise (care should be taken with the use of language as exercise is not always perceived as meaning any or all physical activity but as relating to specific “exercises”)	The GP takes an “exercise history”: the patient’s attitude to taking exercise / physical activity / exercises and their prior experience of these	43	The statement has been simplified – the use of language will be addressed in MOAC 1 training and did not been to be included in the consensus exercise
		The GP takes a “weight history”: the patient’s attitude to taking exercise / physical activity / exercises and their prior experience of these	44	The study team felt on reflection a similar statement to 42 needed to be included for weight
23	The GP should suggest, to all patients, that the patient considers the use of NICE core treatments and indicates briefly the options: strengthening exercises, fitness training and, if relevant, dietary changes to lose weight	The GP suggests, to all patients, that they consider the use of NICE core treatments and indicates briefly the options: strengthening exercises, general exercise / physical activity and, if relevant, dietary changes to lose weight	45	Comment that fitness training might be better expressed as general exercise / physical activity
		The GP explains that exercise may cause muscle soreness initially and that the benefits of exercise may not be immediate	46	Additional statement suggested from comments
		The GP emphasises, when relevant, the benefit of exercise in helping to loose weight in addition to the benefits for OA	47	Additional statement suggested from comments
		The GP emphasises, when relevant, the benefit of loosing weight: that for people with similar severity of radiological OA the heavier they are the more pain they report	48	Balancing statement to 46 added by the study team
		The GP indicates, if the patient is overweight, “where they are” on a BMI chart	49	Additional statement suggested from comments



## MOAC 1 Consensus exercise – revisions to statements after the ideas generation round and reasons why

Orig No.	Original statement	Revised statement or additional contextual information (bold)	Rv No.	Comments / rationale for change
24	The GP explains that these are two areas that can be considered in more detail at the review appointment (MOAC2) but indicates relevant sections of the guidebook which deal with exercise and weight loss, gives simple and brief advice and responds to any queries from the patient	Statement deleted		Now included in revised statements 45 to 48
25	The GP should discuss the need for analgesia, their prior use (especially enquiring as to whether adequate doses were used and if any side effects experienced), and uses the NICE treatment recommendations to guide the discussion with the patient	The GP enquires about the patient's need for painkillers, their prior use, if they were effective, whether adequate doses were used and if any side effects were experienced	50	The study team felt the statement covered two concepts and was split into two statements. The language was altered to be more understandable by the lay expert group
		The GP recommends the use of paracetamol and/or topical NSAIDs before the use of other painkillers (see figure: NICE treatment recommendations for OA)	51	Ditto and the guidance made more explicit
26	The GP should discuss the risks and benefits of analgesics, in particular those of oral non-steroidal anti-inflammatory drugs, using visual aids if needed	The GP explains the risks and benefits of painkillers	52	From comments the statement was simplified
27	The GP should consider with the patient other adjunct treatment recommended by the NICE OA guidance	The GP and the patient discuss whether any other "adjunct treatment" recommended by the NICE OA guidance (the outer ring in the figure) need to be considered	53	Minor rephrasing
28	The GP should consider appropriate referral to members of the extended PHCT e.g. physiotherapist, occupational therapist, podiatrist, social services, community pharmacist and district nursing team	The GP discusses appropriate referral to members of the extended PHCT e.g. physiotherapist, occupational therapist, podiatrist, social services, community pharmacist, district nursing team or work support services	54	From comments work support services added considers change to discusses
29	The GP should consider referral to rheumatology or orthopaedics if red flag symptoms are present, the diagnosis is unclear, if there is persistent pain or disability despite the use of NICE conservative treatments	The GP discusses referral for investigation or to specialist services if a fracture, inflammatory joint disease or septic arthritis is suspected or if the diagnosis is unclear	55	In light of previous comments reference to red flags was dropped and reference made to specific other conditions, the possibility of referring for investigations added and 2o referral made less specific, the reference to persistent pain or disability was dropped as it did not tally with the scenario – considers changed to discusses
30	The GP should consider referral in patients <b>presenting</b> with established/prolonged severe pain, and/or severe functional limitation, for consideration of joint replacement	The GP discusses the option of joint replacement surgery in patients <b>presenting</b> with established/prolonged severe pain, and/or severe functional limitation, in addition to core NICE treatment and painkillers	56	Comments were made that the patient may not want to consider this – and so rephrased. Also comment that needs to be in addition to core treatment / paracetamol
31	The GP should, with the patient, formulate a guided self-management plan which will enable the patient to control their pain, minimise disability and prevent progression	The GP and the patient formulate a self-management plan	57	From the comments the word guided was omitted and the statement truncated
32	The GP summarises the management plan and re-checks that it is acceptable to the patient	The GP summarises the management plan and re-checks that it is acceptable to the patient	58	Not altered
33	The GP should make it clear to the patient when and how to re-consult	The GP explains when the patient should re-consult the GP (separate to the formal review appointment)	59	Re-phrased and placed after statement 58

## MOAC 1 Consensus exercise – revisions to statements after the ideas generation round and reasons why

Orig No.	Original statement	Revised statement or additional contextual information (bold)	Rv No.	Comments / rationale for change
34	The GP should direct the patient to make a follow up appointment for a formal review (MOAC2)	The GP advises the patient to make a follow up appointment for a formal review (MOAC2)	60	Rephrased and placed before statement 59
		The GP uses free-text to record the consultation in the paper/electronic records	61	From comments and decided by the study team two statements on recording the consultation were added
		<b>In addition to “61”</b> the GP records coded data on the main elements of the consultation, such as the level of pain, the BMI and advice to exercise	62	Ditto

### **Appendix 3.5 Final consensus questionnaire (lay group round 1)**

# **Model osteOAthritis Consultation (MOAC) Consensus Exercise**

Arthritis Research Campaign National Primary Care  
Centre

## **Consensus questionnaire**

Study 1 – Round 1  
(Lay consensus group)

**Please first read the participant information sheet  
and then read the introduction and instructions on  
the next page.**



## Introduction

This is a consensus exercise (a way of getting agreement) about what should be done when an older person (45ys and older) with joint pain first comes to see his or her general practitioner (GP).

Although we have recommendations from the National Institute for Health and Clinical Excellence (NICE) on the treatment of osteoarthritis, the commonest cause of joint pain as we get older, we don't have agreement on exactly what should be done by the GP when someone with joint pain first comes to see them. We would like this: so we will know how best to advise GPs to treat osteoarthritis.

We would like your help on deciding what should be included at this first visit. We have put together a long list of all the possible tasks that have been suggested to us by a group of osteoarthritis experts (health professionals and patients) and we would like your opinion on which should be included.

For this round we want you to imagine that **time is no object**; that the GP is able to give the patient at least 30 minutes, or that some of the assessment could be done at a second appointment. In the next round we will ask you what should be included in a ten-minute consultation.

## What we are not asking you to decide

We have already decided that:

1. We are using the NICE recommendations on the treatment of osteoarthritis. They recommend that all people with osteoarthritis should get three core treatments and that other treatments are used if there is ongoing pain or disability (see figure 1 on page 3).
2. We are using an approach to treating long-term illness called guided self-management. In this the patient's management of their own condition is supported by the GP, and other healthcare professionals working with the GP, and with the use of written information and advice. We have produced an *Osteoarthritis Guidebook* (enclosed with this mailing) to be used with this approach.
3. Once the patient has been assessed by the GP he/she will be offered an appointment with a specially trained healthcare professional working in the practice; to go through the guidebook with the patient and support them in planning how best to manage their osteoarthritis. This is something new and an approach we are developing for a research study being undertaken at Keele (see figure 2 page 3).

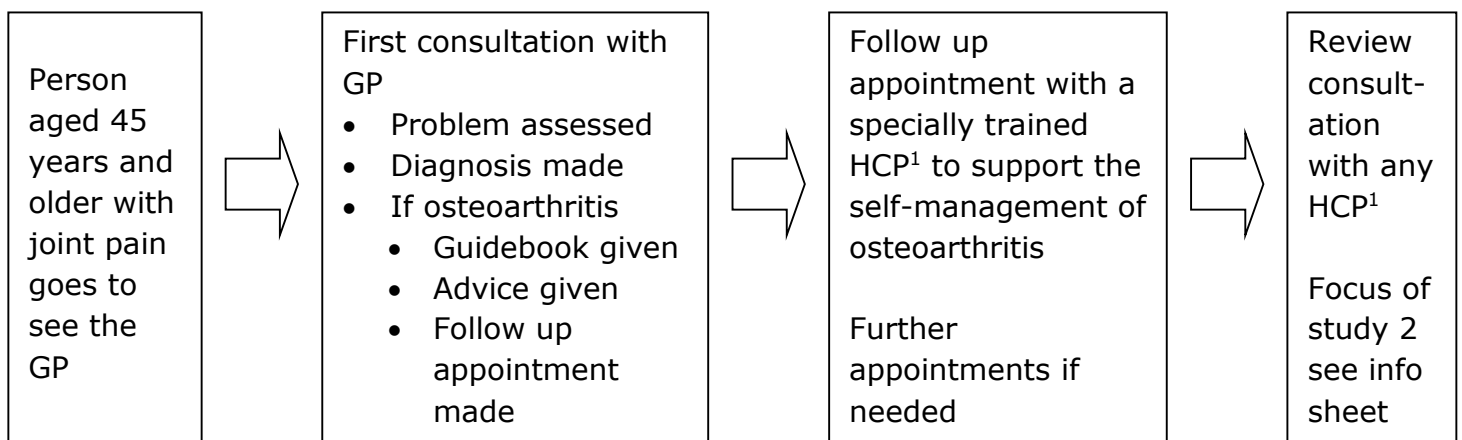
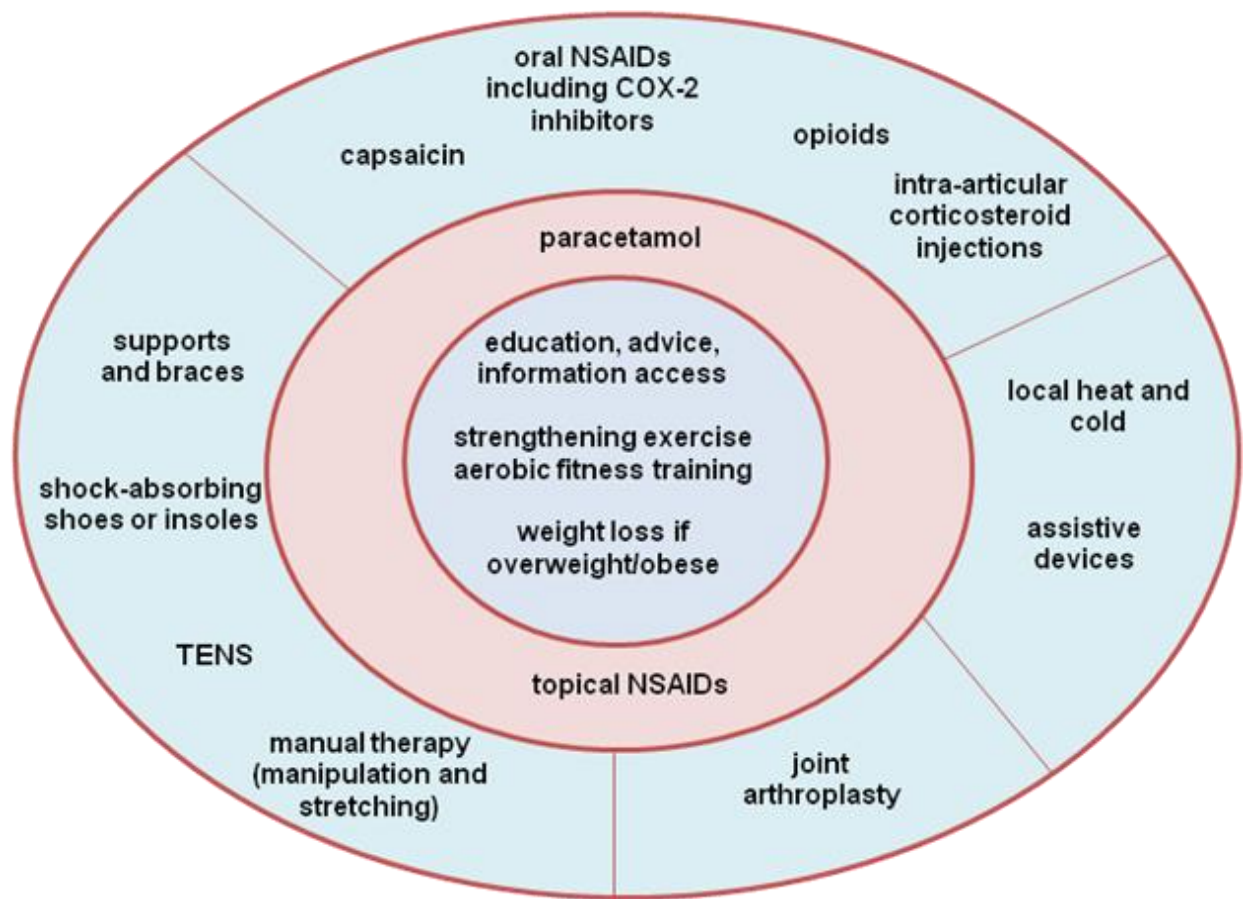


Figure 2: Flow chart of first, follow-up and review consultations  
(1 – healthcare professional)

## What we need you to do

**We would like you to read the scenario and then work through the list of statements deciding if you think they should, or should not, be part of an initial assessment with a GP for the problem given in the scenario.**

**We suggest you read through all the statements first, to get an idea of all the tasks that have been suggested.**

### Scenario

A 57 year old attends the GP for the first time with a knee problem. The problem has worsened over the past few months and the patient has come to ask for help in coping with it.

### Instructions

For each statement please decide if you think the task should be included in the initial consultation with a GP, by putting a cross in the appropriate box.

For example:

The GP gives the patient an apple

Definitely included	Probably included	Undecided / not sure	Probably not included	Definitely not included	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1. Cross one box only for each statement
2. Use the "don't know" box if you feel you are not experienced or qualified enough to decide, or do not understand the statement



## **A few more points before you start**

- **Remember to imagine for this round that time is no object**
- **Please scan through all the statements before starting**
- **Remember that the patient will have the opportunity to have a follow up appointment with a specially trained healthcare professional in the practice to further support them in managing their osteoarthritis**
- **You can assume that the patient and the GP have decided only to discuss the knee problem, and to leave any other problems to another time**
- **Please note the statements are not intended to be used word for word by the GP.**

**Please continue on the next page**

## Section 1 – The Model osteOA Arthritis Consultation

### Gathering information

The following statements cover information that could be gathered to assess the problem.

If the patient has already provided the information when reporting their “story” it is not intended that the GP systematically work through all the tasks, nor ask them in the order presented.

They are the points that a GP might need to explore to gain the necessary information to assess the problem.

1. The GP encourages the patient to give a full account of the problem(s), including the reason for coming today

Definitely included	Probably included	Undecided / not sure	Probably not included	Definitely not included	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. The GP finds out how long the patient has had the knee problem for and whether the problem comes and goes

Definitely included	Probably included	Undecided / not sure	Probably not included	Definitely not included	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. The GP asks specific questions about the amount and type of any pain

Definitely included	Probably included	Undecided / not sure	Probably not included	Definitely not included	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4. The GP assesses the degree of pain using a formal measure, such as rating the pain on a scale from 0 to 10

Definitely included	Probably included	Undecided / not sure	Probably not included	Definitely not included	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5. The GP asks about other knee symptoms such as stiffness, locking and giving way

Definitely included	Probably included	Undecided / not sure	Probably not included	Definitely not included	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6. The GP asks about problems with mobility, such as walking, going up and down stairs, and getting in and out of a chair

Definitely included	Probably included	Undecided / not sure	Probably not included	Definitely not included	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

7. The GP assesses the extent of mobility problems using a formal measure, such as a rating scale from 0 to 10.

Definitely included	Probably included	Undecided / not sure	Probably not included	Definitely not included	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

8. The GP asks if, and how, the knee problem affects activities such as work, hobbies, sports and general leisure activities

Definitely included	Probably included	Undecided / not sure	Probably not included	Definitely not included	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

9. The GP asks about; previous problems with the knee, knee operations, knee injections

Definitely included	Probably included	Undecided / not sure	Probably not included	Definitely not included	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

10. The GP asks about a family history of joint problems

Definitely included	Probably included	Undecided / not sure	Probably not included	Definitely not included	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

11. The GP asks about jobs which may have affected / caused the knee problem, such as those involving a lot of kneeling (for example, carpet fitter, cleaner, joiner, electrician)

Definitely included	Probably included	Undecided / not sure	Probably not included	Definitely not included	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

12. The GP asks about problems with other joints, especially the other knee and the hips

Definitely included	Probably included	Undecided / not sure	Probably not included	Definitely not included	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

13. The GP asks about the patient's ideas, concerns, fears and feelings about the problem

Definitely included	Probably included	Undecided / not sure	Probably not included	Definitely not included	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

14. The GP asks about the patient's expectations of the consultation

Definitely included	Probably included	Undecided / not sure	Probably not included	Definitely not included	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

15. The GP asks which problem, concerning the knee, the patient wants help with most, for example pain, stiffness or climbing the stairs

Definitely included	Probably included	Undecided / not sure	Probably not included	Definitely not included	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

16. The GP asks about who the patient has seen, or asked for help from, about the problem

Definitely included	Probably included	Undecided / not sure	Probably not included	Definitely not included	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

17. The GP asks if the patient has tried anything to help the problem, and if yes, what / how used / how effective

Definitely included	Probably included	Undecided / not sure	Probably not included	Definitely not included	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

18. The GP checks if there is anything in the patient's story to suggest a fracture, cancer, inflammatory or septic arthritis

Definitely included	Probably included	Undecided / not sure	Probably not included	Definitely not included	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

19. The GP assesses the patient's mood for symptoms of anxiety and depression

Definitely included	Probably included	Undecided / not sure	Probably not included	Definitely not included	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

20. The GP screens the patient for depression using a formal depression screening tool

Definitely included	Probably included	Undecided / not sure	Probably not included	Definitely not included	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

21. The GP asks about other conditions, such as diabetes, heart or kidney disease, which might affect the management of the knee problem

Definitely included	Probably included	Undecided / not sure	Probably not included	Definitely not included	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

22. The GP asks about circumstances, such as unemployment and financial hardship, which might affect the management of the knee problem

Definitely included	Probably included	Undecided / not sure	Probably not included	Definitely not included	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Physical examination

23. The GP assesses the knee joint by general observation of the patient's walking pattern, mobility and footwear

Definitely included	Probably included	Undecided / not sure	Probably not included	Definitely not included	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

24. The GP examines the knee joint and surrounding tissues

Definitely included	Probably included	Undecided / not sure	Probably not included	Definitely not included	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

25. The GP performs a specific test, such as a timed walk test, to assess function

Definitely included	Probably included	Undecided / not sure	Probably not included	Definitely not included	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

26. The GP examines the other knee, hips and hands for signs of osteoarthritis

Definitely included	Probably included	Undecided / not sure	Probably not included	Definitely not included	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



27. If not recently done, the GP measures weight and height to calculate the body mass index (BMI)

Definitely included	Probably included	Undecided / not sure	Probably not included	Definitely not included	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

28. The GP undertakes a full examination of the locomotor system (of the joints and muscles)

Definitely included	Probably included	Undecided / not sure	Probably not included	Definitely not included	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**At this point in the consultation the GP will normally decide what is probably the matter – they will make a “working diagnosis”.**

**A working diagnosis of osteoarthritis can be made without an x-ray if:**

- 1. The person is aged age 45 years and over**
- 2. There is persistent joint pain which is worse with use**
- 3. The GP thinks an alternative diagnosis is unlikely**

**If an alternative diagnosis is suspected then the GP may refer the patient for investigation or to a specialist.**

**The statements on the following pages relate to a consultation in which a working diagnosis of osteoarthritis has been made.**

## Explanation and planning

For this section please assume that the GP will tailor any explanation or advice to the patient's:

- Specific problem
- Ideas, concerns, fears and feelings about their problem, and osteoarthritis and its treatment in general
- Expectations of the consultation.

And that the GP will; i) be positive but realistic about osteoarthritis, ii) correct any misconceptions, iii) challenge any negative views and iv) reinforce positive ones.

### *Information giving*

29. The GP informs the patient that the most likely reason for the problem is osteoarthritis and explains the reason(s) for coming to this diagnosis

Definitely included	Probably included	Undecided / not sure	Probably not included	Definitely not included	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

30. The GP enquires about the patient's views and understanding of osteoarthritis

Definitely included	Probably included	Undecided / not sure	Probably not included	Definitely not included	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

31. The GP gives a brief explanation of osteoarthritis

Definitely included	Probably included	Undecided / not sure	Probably not included	Definitely not included	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**The next two statements are possible additions to "31"**

32. The GP, in addition to "31", gives an explanation on the likely cause of osteoarthritis

Definitely included	Probably included	Undecided / not sure	Probably not included	Definitely not included	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

33. The GP, in addition to "31", gives an explanation of the likely outcome for people with osteoarthritis

Definitely included	Probably included	Undecided / not sure	Probably not included	Definitely not included	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

34. The GP explores the patient's understanding of the information given, and their reaction / beliefs / feelings about it

Definitely included	Probably included	Undecided / not sure	Probably not included	Definitely not included	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

35. The GP asks if the patient has any unanswered questions

Definitely included	Probably included	Undecided / not sure	Probably not included	Definitely not included	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

36. The GP tells the patient that they are central to the management of their own condition: that self-management of osteoarthritis is necessary and important

Definitely included	Probably included	Undecided / not sure	Probably not included	Definitely not included	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

37. The GP explains that the central role of the primary healthcare team (PHCT) in the management of osteoarthritis is to support and guide self-management

Definitely included	Probably included	Undecided / not sure	Probably not included	Definitely not included	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

38. The GP explains the purpose of managing osteoarthritis to: i) improve understanding, ii) reduce pain, iii) improve mobility and iv) reduce the risk of it getting worse

Definitely included	Probably included	Undecided / not sure	Probably not included	Definitely not included	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

39. The GP explains the approach to the treatment of osteoarthritis recommended by NICE (see figure 1 page 3)

Definitely included	Probably included	Undecided / not sure	Probably not included	Definitely not included	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**At this point the GP introduces the *Osteoarthritis Guidebook* and offers the patient a copy.**

**The GP explains that the guidebook is to help with the self-management of osteoarthritis and that a follow up appointment will be made to support this.**

40. The GP hands the guidebook to the patient with the advice to read it

Definitely included	Probably included	Undecided / not sure	Probably not included	Definitely not included	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**The next statement is a possible addition to "40"**

41. The GP, in addition to "40", highlights sections in the guidebook relevant to the patient's problem

Definitely included	Probably included	Undecided / not sure	Probably not included	Definitely not included	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### **Management plan**

42. The GP asks if the patient has any views / preferences for what treatment they might want to consider next, and, if they do, what they are

Definitely included	Probably included	Undecided / not sure	Probably not included	Definitely not included	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

43. The GP takes an "exercise history": the patient's attitude to taking exercise / physical activity / exercises and their experience of these

Definitely included	Probably included	Undecided / not sure	Probably not included	Definitely not included	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

44. The GP takes a "weight history": the patient's attitude to losing weight and their prior experience of doing this

Definitely included	Probably included	Undecided / not sure	Probably not included	Definitely not included	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

45. The GP indicates, if the patient is overweight, where they are on a body mass index (BMI) chart

Definitely included	Probably included	Undecided / not sure	Probably not included	Definitely not included	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

46. The GP encourages the patient to consider the use of "NICE core treatments" – increased physical activity / muscle strengthening exercises / dietary changes to lose weight, if needed

Definitely included	Probably included	Undecided / not sure	Probably not included	Definitely not included	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

47. The GP emphasises, when relevant, the benefit of losing weight: that if weight is lost then the pain reduces

Definitely included	Probably included	Undecided / not sure	Probably not included	Definitely not included	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

48. The GP emphasises, when relevant, the benefit of exercise in helping to lose weight in addition to the benefits for osteoarthritis

Definitely included	Probably included	Undecided / not sure	Probably not included	Definitely not included	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

49. The GP explains that exercise may cause muscle soreness initially and that the benefits of exercise may not be immediate

Definitely included	Probably included	Undecided / not sure	Probably not included	Definitely not included	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

50. The GP enquires about the patient's need for painkillers

Definitely included	Probably included	Undecided / not sure	Probably not included	Definitely not included	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

51. The GP recommends the use of paracetamol and/or topical NSAIDs (creams or ointments) before the use of other painkillers (see figure 1 on page 3)

Definitely included	Probably included	Undecided / not sure	Probably not included	Definitely not included	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

52. The GP explains the risks and benefits of painkillers

Definitely included	Probably included	Undecided / not sure	Probably not included	Definitely not included	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

53. The GP and the patient discuss whether any other extra treatment needs to be considered (the outer ring in the figure 1 on page 3)

Definitely included	Probably included	Undecided / not sure	Probably not included	Definitely not included	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



54. The GP discusses appropriate referrals, for example to; physiotherapy, occupational therapy, podiatry, social services, community pharmacy, district nursing service or work support services

Definitely included	Probably included	Undecided / not sure	Probably not included	Definitely not included	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

55. The GP discusses the option of joint replacement surgery in patients with established severe pain, or severe functional limitation, in addition to core treatments and painkillers

Definitely included	Probably included	Undecided / not sure	Probably not included	Definitely not included	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

56. The GP and the patient formulate a self-management plan

Definitely included	Probably included	Undecided / not sure	Probably not included	Definitely not included	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Closing the consultation

57. The GP summarises the management plan and re-checks that it is acceptable to the patient

Definitely included	Probably included	Undecided / not sure	Probably not included	Definitely not included	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

58. The GP advises the patient to make a follow up appointment for a follow up appointment with the specially trained healthcare professional (see figure 2 on page 3)

Definitely included	Probably included	Undecided / not sure	Probably not included	Definitely not included	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

59. The GP explains when the patient should re-consult the GP (separate to the formal review appointment)

Definitely included	Probably included	Undecided / not sure	Probably not included	Definitely not included	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Please continue overleaf**

## Recording the consultation

60. The GP uses free-text to record the consultation in the paper/electronic records

Definitely included	Probably included	Undecided / not sure	Probably not included	Definitely not included	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**The next statement is a possible addition to "60"**

61. **In addition to "60"** the GP records coded data on the; i) diagnosis and ii) main elements of the consultation, such as the level of pain, the BMI and advice to exercise

Definitely included	Probably included	Undecided / not sure	Probably not included	Definitely not included	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Please continue the questionnaire on the next page**

## Section 2 - About you

1. Do you have osteoarthritis?

☐

Yes (go to question 2)

☐

No (go to question 4)

2. If you have osteoarthritis:

a. Have you **ever** been to see your GP, or other healthcare professional in the practice, about a problem related to your osteoarthritis?

☐

Yes (go to question 2b)

☐

No (go to question 3)

b. **In the last year** have you been to see your GP, or other healthcare professional in the practice, about a problem related to your osteoarthritis?

☐

Yes

☐

No

3. Which joints are affected by your osteoarthritis? Please mark any or all that apply.

☐

Knee

☐

Hip

☐

Hand

☐

Lower Back

☐

Neck

☐

Other joint or joints. Please say which .....

4. Do you have experience of looking after someone with osteoarthritis?

☐

Yes

☐

No

**Please continue overleaf**

**Thank you for completing the questionnaire.**

**Now please read and, if you are happy, initial and sign the consent form on the next page and return the questionnaire in the stamped addressed envelope.**

Study ID

**Study title** Model OA Consultation  
Consensus Exercise

**IRAS Project code: 9084**

Study 1 lay expert group

Version 2 27/02/09

**Chief investigator** Dr M Porcheret

## **Consent form**

Please initial  
all the boxes  
if you agree

1 - I confirm that I have read and understood the study information leaflet (LEG Info sheet version 2, dated 27/02/09) and am willing to take part in the study.

☐

2 - I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason.

☐

3 - I understand that my participation in this study involves completing two consensus exercise questionnaires – this one (round 1) and a round 2 questionnaire that will be mailed to me after about one month.

☐

4 - I understand that I will be contacted again, in about four months, to be invited to take part in a second consensus exercise – on the content and style of a follow up consultation for osteoarthritis.

☐

**Name of participant (print)**

**Date**

**Signature**

.....

...../...../.....

.....

### **Please note:**

- **All information held about you as part of this study will be held in confidence by the Keele study team.**
- **This consent form is stored separately from the completed questionnaire.**

Study ID
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## Appendix 4.1 Topic guide for GP advisory group meetings

### MOSAICS Study

#### Topic guide for GP / practice advisory group meetings

##### 1. Introduction

Welcome attendees and explain the aim of the meeting is to understand

- a) Where we are now (in terms of the current management of OA, current views on the intervention (NICE OA guidance implemented via MOSAICS trial intervention using guided self-management), and the gap(s) between current and recommended practice, and that proposed for the trial
- b) The barriers and incentives to changing practice

Confirm I would like to audio-record the session and get permission

- 2. Present the context of OA management in primary care and the intervention and review the Quick reference guide to the NICE OA Guideline, the *OA Guidebook* and the results of the MOSAICS consensus exercise that was sent out in advance (PowerPoint slides)
- 3. Ask what their views are about the current management of OA in primary care?
- 4. Ask what their views on the key recommendations of the NICE OA Guideline and the MOSAICS intervention? (Prompt for **awareness and agreement** on each of the following, use flip chart to record this, and facilitate discussion)
  - a. NICE OA Guideline and key recommendations
    - i. Holistic assessment
    - ii. Core treatments
      - 1. Activity and exercise
      - 2. Weight loss
    - iii. Adjuncts to core therapies
      - 1. Paracetamol
      - 2. Topical NSAIDs
      - 3. Oral NSAIDs
    - iv. Referral for surgery
      - 1. Not for arthroscopic lavage and debridement



## 2. For arthroplasty

- b. The structure of the intervention
  - i. The OA Guidebook and the concept of guided self-management
  - ii. GP consultation - the key tasks identified by the consensus exercise
  - iii. Nurse consultation – behaviour change / exercise and weight loss / pain management

- 5. Ask what their views are on the gaps between current practice and that recommended in the intervention (facilitate discussion with views written on a flip chart)

Guide the discussion so that the gap between current practice and the following are covered:

- a. Key recommendations in the NICE OA guideline
- b. The MOSAICS trial intervention
- c. The key tasks in the GP consultation
- d. The nurse consultation

- 6. Ask if they would be **able** to adopt new practice? (Write views on a flip chart).
- 7. Ask if they would be able to **adhere** to new practice, to bridge the identified gaps (Write views on a flip chart).
- 8. Ask what they think are the **barriers and incentives** for changing practice for the following areas:
  - a. Where a lack of **awareness** has been identified by the group
  - b. Where a lack of **agreement** has been identified by the group
  - c. Where gaps have been identified between recommended practice and current practice
  - d. Where problems with **adoption** have been identified
  - e. Where problems with **adherence** have been identified

## **Appendix 4.2 Presentation for GP advisory group meetings**

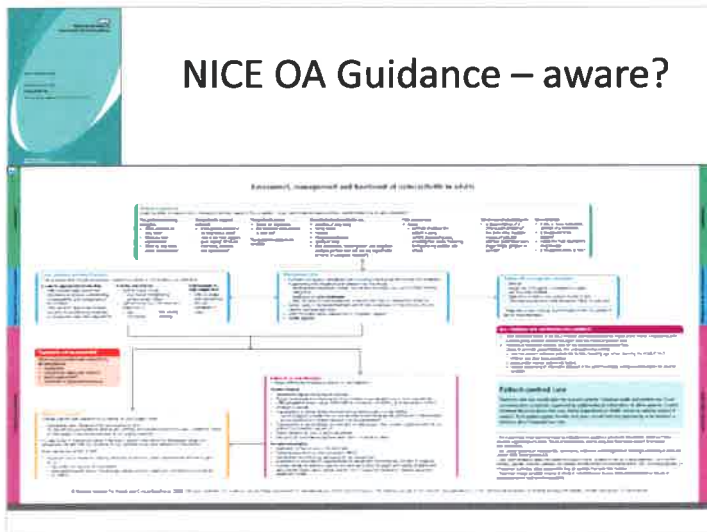
# Management of Osteoarthritis

GP Advisory Group Meeting 2  
Wednesday 10<sup>th</sup> February 2010

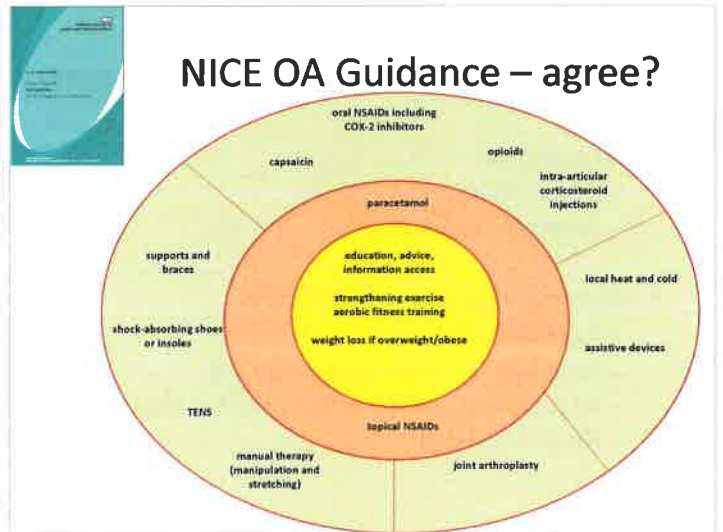
## CURRENT OA MANAGEMENT

WHERE ARE WE NOW?

### NICE OA Guidance – aware?



### NICE OA Guidance – agree?

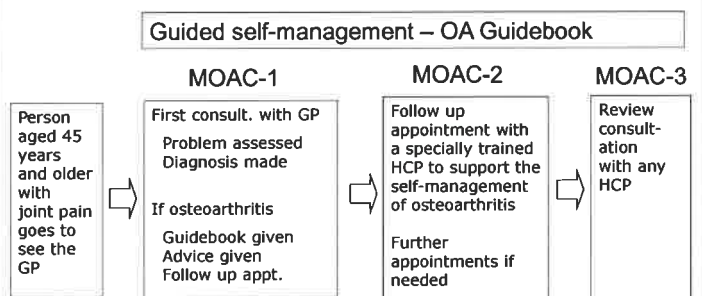


## MOSAICS

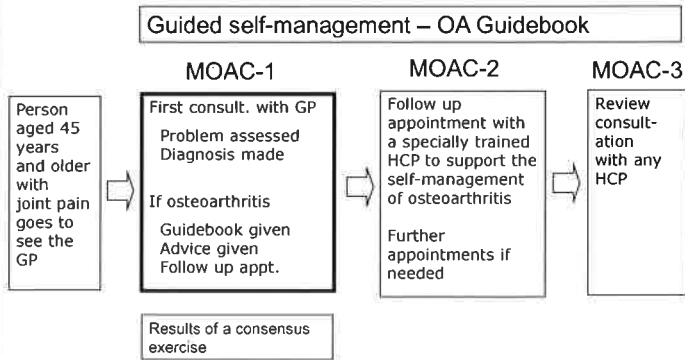
### Management of Osteoarthritis In Consultations

How to implement the NICE OA Guidelines?

### MOSAICS intervention – agree?



## MOSAICS intervention – agree?



## MOAC-1: assessment – agree?

- Tell story and if not covered ask about:
  - Pain: how long / how often / type / etc
  - Other symptoms
  - Other joint problems – knee / hip / hand
  - Mobility / activities
  - Previous problems / operations / injections
  - Previous treatments used / tried
  - ICE / feelings
  - Red Flags - # / sepsis / Ca / RA

## MOAC-1: exam & diagnosis – agree?

- Examination
  - Observation
  - Exam affected joint(s)
- Working diagnosis of OA made
  - Aged 45+
  - Persistent joint pain worse with use
  - Alternative diagnosis unlikely (no red flags)
  - No x-ray needed

## MOAC-1: advice – agree?

- Give the diagnosis and reasons why made
  - Check patient's understanding of OA
  - Give a brief explanation of OA
  - Check for and answer any questions
- Promote self-management of OA
- Explain the purpose of OA treatment
- Offer OA Guidebook

## MOAC-1: treatment & closing – agree?

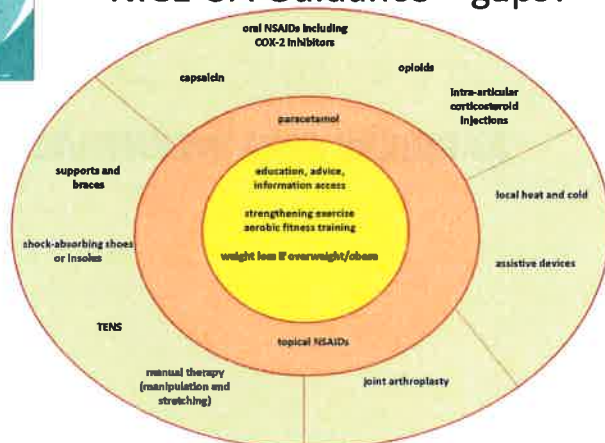
- Treatment plan
  - Check patient's preferences
  - Promote exercise and (if applicable) weight loss
  - Check patient's need for analgesia
  - Advise paracetamol +/- topical NSAIDs (before oral NSAIDs)
- Closing the consultation
  - Summarise the plan / check if acceptable
  - Advise FU appt. for MOAC-2
  - Free text and coded consultation record

## THE GAPS

Between what you do now and what has been proposed

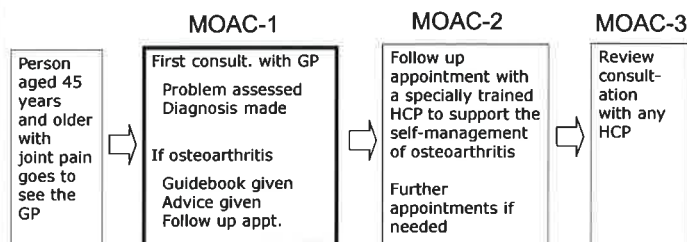


## NICE OA Guidance – gaps?



## MOSAICS intervention – gaps?

### Guided self-management – OA Guidebook



## MOAC-1: assessment – gaps?

- Tell story and if not covered ask about:
  - Pain: how long / how often / type / etc
  - Other symptoms
  - Other joint problems – knee / hip / hand
  - Mobility / activities
  - Previous problems / operations / injections
  - Previous treatments used / tried
  - ICE / feelings
  - Red Flags - # / sepsis / Ca / RA

## MOAC-1: exam & diagnosis – gaps?

- Examination
  - Observation
  - Exam affected joint(s)
- Working diagnosis of OA made
  - Aged 45+
  - Persistent joint pain worse with use
  - Alternative diagnosis unlikely (no red flags)
  - No x-ray needed

## MOAC-1: advice – gaps?

- Give the diagnosis and reasons why made
  - Check patient's understanding of OA
  - Give a brief explanation of OA
  - Check for and answer any questions
- Promote self-management of OA
- Explain the purpose of OA treatment
- Offer OA Guidebook

## MOAC-1: treatment & closing – gaps?

- Treatment plan
  - Check patient's preferences
  - Promote exercise and (if applicable) weight loss
  - Check patient's need for analgesia
  - Advise paracetamol +/- topical NSAIDs (before oral NSAIDs)
- Closing the consultation
  - Summarise the plan / check if acceptable
  - Advise FU appt. for MOAC-2
  - Free text and coded consultation record

## **BRIDGING THE GAPS**

What would need to happen to bridge the gaps you have identified?

## **BARRIERS AND INCENTIVES**

Barriers to and incentives for:

- Increased agreement
- Bridging the gaps

**HAVE WE FORGOTTEN ANYTHING?**

**THANK YOU**



## **Appendix 4.3 Model OA consultation tasks labelled by headings**

Task no.	Task	Heading(s) task grouped under
1	The GP encourages the patient to give a full account of the problem(s), including the reason for coming today	Assessment
2	The GP finds out how long the patient has had the knee problem for and whether the problem comes and goes	Assessment
3	The GP asks specific questions about the amount and type of any pain	Assessment
5	The GP asks about other knee symptoms such as stiffness, locking and giving way	Assessment
6	The GP asks about problems with mobility, such as walking, going up and down stairs, and getting in and out of a chair	Assessment
8	The GP asks if, and how, the knee problem affects activities such as work, hobbies, sports and general leisure activities	Assessment
9	The GP asks about; previous problems with the knee, knee operations, knee injections	Assessment
12	The GP asks about problems with other joints, especially the other knee and the hips	Assessment
13	The GP asks about the patient's ideas, concerns, fears and feelings about the problem	Assessment Self-management support
14	The GP asks about the patient's expectations of the consultation	Assessment Self-management support
17	The GP asks if the patient has tried anything to help the problem, and if yes, what / how used / how effective	Assessment Self-management support
18	The GP checks if there is anything in the patient's story to suggest a fracture, cancer, inflammatory or septic arthritis	Assessment
23	The GP assesses the knee joint by general observation of the patient's walking pattern, mobility and footwear	Assessment
24	The GP examines the knee joint and surrounding tissues	Assessment
29	The GP informs the patient that the most likely reason for the problem is osteoarthritis and explains the reason(s) for coming to this diagnosis	Giving the diagnosis
30	The GP enquires about the patient's views and understanding of osteoarthritis	Giving the diagnosis Self-management support



31	The GP gives a brief explanation of osteoarthritis	Giving the diagnosis
35	The GP asks if the patient has any unanswered questions	Giving the diagnosis Self-management support
36	The GP tells the patient that they are central to the management of their own condition: that self-management of osteoarthritis is necessary and important	Self-management support
38	The GP explains the purpose of managing osteoarthritis to: improve understanding, reduce pain, improve mobility and reduce the risk of it getting worse	Self-management support
40	The GP hands the guidebook to the patient with the advice to read it	Self-management support
42	The GP asks if the patient has any views / preferences for what treatment they might want to consider next, and, if they do, what they are	Self-management support GP management
46	The GP encourages the patient to consider the use of “NICE core treatments” – increased physical activity / muscle strengthening exercises / dietary changes to lose weight, if needed	GP management Self-management support Evidence-based practice
47	The GP emphasises, when relevant, the benefit of losing weight: that if weight is lost then the pain reduces	GP management Self-management support Evidence-based practice
48	The GP emphasises, when relevant, the benefit of exercise in helping to lose weight in addition to the benefits for osteoarthritis	GP management Self-management support Evidence-based practice
50	The GP enquires about the patient’s need for painkillers	GP management Self-management support
51	The GP recommends the use of paracetamol and/or topical NSAIDs (creams or ointments) before the use of other painkillers	GP management Self-management support Evidence-based practice
52	The GP explains the risks and benefits of painkillers	GP management Self-management support
56	The GP and the patient formulate a self-management plan	Self-management support
57	The GP summarises the management plan and re-checks that it is acceptable to the patient	GP management Self-management support
58	The GP advises the patient to make a follow up appointment for a follow up appointment with the specially trained healthcare professional	Self-management support
60	The GP uses free-text to record the consultation in the paper/electronic records	GP management Self-management support
61	In addition to the task above the GP records coded data on the; i) diagnosis and ii) main elements of the consultation, such as the level of pain, the BMI and advice to exercise	GP management Self-management support

## Appendix 4.4 Model OA consultation tasks allocated to one of six headings

Key consultation task	Heading	Tasks included (number of task)
Assessing and diagnosing the problem (including understanding the patient's illness and how they are self-caring for it, making the diagnosis of OA clinically)	Assessment Self-care support	1, 2, 3, 5, 6, 8, 9, 12, 13, 14, 17, 18, 23, 24
<i>If OA:</i>		
Explaining OA and its treatment (including giving the diagnosis tailored to the patient's individual problem and level of understanding and promoting NICE core treatments)	Giving the diagnosis Self-care support Evidence-based practice	29, 30, 31, 35, 38, 46, 47, 48
Managing OA (including pain and negotiating a treatment plan)	GP management Self-care support Evidence-based practice	42, 50, 51, 52
Supporting self-care (including promoting OA Guidebook and MOAC-2)	Self-care support	36, 40, 56, 57, 58
Recording the consultation (including using the OA template)	GP management Self-care support	60, 61

## **Appendix 4.5 Analysis of GP advisory group meetings using the Theoretical Domains Framework**

Behaviour determinant domains and <i>suggested questions</i>	Key Consultation tasks				
	1 Addressing the problem	2 Assessing and diagnosing the problem	3 Explaining OA and its treatment	4 Managing OA (pain and negotiation of plan)	5 Supporting self-care (including promoting guidebook and MOAC-2)
<p>Knowledge</p> <ol style="list-style-type: none"> <li>1. <i>Do they know about the NICE OA guideline?</i></li> <li>2. <i>What do they think the guideline says?</i></li> <li>3. <i>What do they think the evidence is?</i></li> <li>4. <i>Do they know they should be managing OA?</i></li> <li>5. <i>Do they know why they should be managing OA?</i></li> <li>6. <i>What do they know about OA (MP)</i></li> </ol> <p><i>Note these questions seem to map to “awareness” and “agreement” concepts from Pathman et al.</i></p>	<p>1– probably not 2– probably not fully aware 3- don’t know or have misconceptions 4- probably but some do not perceive a role, as “part of ageing”, “nothing can be done” 5- yes but not fully aware 6- probably not a lot and/or have misconceptions</p> <p><b>NICE OA guidance (1,2,4)</b> <b>Efficacy of treatments for OA (3)</b> <b>Burden / prognosis / pathophysiology of OA and pain in OA (4,5,6)</b> <b>Experience of patients with OA of GP (4,5,6)</b></p>	<p>2– uncertainty on making the diagnosis, and lack of awareness of support for self-care and agreement with this approach</p> <p><b>MOAC-1 content</b> <b>Rationale for making the diagnosis of OA clinically</b> <b>Rationale for giving the diagnosis</b> <b>Self-care of OA</b> <b>Self-care support</b> <b>Patient-centred consulting to support self-care (use of ICE and asking about their ideas for Rx)</b></p>	<p>2- probably not fully aware 3- don’t know or have misconceptions 6-not known but assume: know little, have misconceptions</p> <p><b>NICE OA guidance (2)</b> <b>Efficacy of treatments for OA (3)</b> <b>Burden / prognosis / pathophysiology of OA and pain in OA (6)</b></p>	<p>2– probably not fully aware 3- don’t know or have misconceptions</p> <p><b>NICE OA guidance (2)</b> <b>Patient-centred consulting (2)</b> <b>Efficacy of treatments for OA (3)</b> <b>Role of the multi-professional team</b></p>	<p>2- self-care support: lack of awareness / agreement</p> <p><b>Self-care for OA</b> <b>Self-care support</b> <b>Patient-centre consulting</b> <b>OA Guidebook content (read for “homework”)</b> <b>MOAC-2 content</b></p>

Behaviour determinant domains and <i>suggested questions</i>	Key Consultation tasks				
	1 Addressing the problem	2 Assessing and diagnosing the problem	3 Explaining OA and its treatment	4 Managing OA (pain and negotiation of plan)	5 Supporting self-care (including promoting guidebook and MOAC-2)
Skills 1. <i>Do they know how to do it?</i> 2. <i>How easy or difficult do they find consulting for OA?</i>	2-Time pressures in the consultation are an obstacle <b>Need a session on how to approach when not problem no. 1 and the “short-cut approach”</b>	1- Query ability to take an OA history Uncertainty in use of ICE in the consultation Making a clinical OA diagnosis <b>Skills session on OA history taking (asking ICE questions (but many will be fine on this) and making the diagnosis</b>	1- Uncertainty in giving an explanation of OA and its treatment, and in use of language in giving the diagnosis Ability to be patient-centred <b>Skills session: giving / explaining diagnosis and use of language</b>	1- Ability to be patient-centred 1- Prescribing strong opioids and use of NICE treatment options <b>Practical session on use of NICE recommended treatments</b>	1- Ability to be patient-centred and selling the OA Guidebook and MOAC-2 <b>Skills session on use of the guidebook and selling MOAC2</b>
Social/professional role and identity 1. <i>What is the purpose of the NICE OA guideline?</i> 2. <i>What do they think about the credibility of the source?</i> 3. <i>Do they think guidelines should determine their behaviour?</i> 4. <i>Is managing OA in line with NICE compatible or in conflict with professional standards/identity?</i>	GPs can have a negative attitude to guidelines and NICE (though some don't) which can influence the OA guideline's credibility <b>Discussion on use of guidelines ( and specifically NICE guidance and NICE OA guidance) to inform clinical practice.</b>				Manchester group's qualitative work indicates that self-care can conflict with professional care – practitioners letting go / losing autonomy. Though this was not expressed in the three MOAC advisory group meetings <b>Discussion on support for self-care</b>

Behaviour determinant domains and <i>suggested questions</i>	Key Consultation tasks				
	1 Addressing the problem	2 Assessing and diagnosing the problem	3 Explaining OA and its treatment	4 Managing OA (pain and negotiation of plan)	5 Supporting self-care (including promoting guidebook and MOAC-2)
Beliefs about capabilities 1. <i>How difficult / easy is it for the GPs to deliver MOAC-1?</i> 2. <i>What problems have they encountered?</i> 3. <i>What would help them?</i> 4. <i>How confident that they can do this?</i> 5. <i>How confident of maintaining MOAC1?</i> 6. <i>How well equipped / comfortable?</i>	1- Lack of time to deliver MOAC-1 when OA is one of a number of problems, when there are other priorities for the consultation 2,3- Not known <b>Need to have overt discussion on 1</b> <b>Use of case histories from practice and reflection on simulated consultation may answer 2 and 3</b>	1- difficulty in making a clinical diagnosis of OA			

Behaviour determinant domains and <i>suggested questions</i>	Key Consultation tasks				
	1 Addressing the problem	2 Assessing and diagnosing the problem	3 Explaining OA and its treatment	4 Managing OA (pain and negotiation of plan)	5 Supporting self-care (including promoting guidebook and MOAC-2)
Beliefs about consequences 1. <i>What do they think will happen if they deliver MOAC1?</i> 2. <i>What are the costs?</i> 3. <i>What will happen if they don't deliver MOAC1?</i> 4. <i>Do the benefits outweigh the costs?</i> 5. <i>How will they feel if they do/don't deliver MOAC1?</i> 6. <i>Does the evidence suggest that delivering MOAC1 is a good thing?</i>	1- Not a lot as treatments lack efficacy, but increased patient satisfaction as “patients welcome this” 2- Not addressing / managing other problems / longer consultations / more work for GPs 3- Patients inadequately managed 4 – Don’t know <b>Discussion on beliefs about consequences and challenge negative beliefs</b>			1- Safer prescribing if reduced use of oral NSAIDs, but is exercise “safe” in the elderly?	

Behaviour determinant domains and <i>suggested questions</i>	Key Consultation tasks				
	1 Addressing the problem	2 Assessing and diagnosing the problem	3 Explaining OA and its treatment	4 Managing OA (pain and negotiation of plan)	5 Supporting self-care (including promoting guidebook and MOAC-2)
Motivation and goals 1. <i>How much do they want to deliver MOAC1?</i> 2. <i>How much do they feel they need to deliver MOAC1?</i> 3. <i>Are there other things they want to do that would interfere with delivering MOAC1?</i> 4. <i>Does NICE OA guideline conflict with others?</i> 5. <i>Are there incentives to deliver MOAC1?</i>	1- not a high priority for GPs What are the incentives? <b>MOSAICS practice payments</b> <b>Practice nurse training and provision of lifestyle change intervention</b> <b>Discussion on motivation to change and challenge poor motivation</b>				
Memory attention and decision processes 1. <i>Is delivering MOAC1 something they usually do?</i> 2. <i>Will they think to deliver MOAC1?</i> 3. <i>How much attention will they have to pay to deliver MOAC1?</i> 4. <i>Will they remember to do it? How?</i> 5. <i>Might they decide not to deliver MOAC1? Why?</i>	1- No 2 – Not sure <b>4- Use of study aide memoirs and the template</b>				



Behaviour determinant domains and <i>suggested questions</i>	Key Consultation tasks				
	1 Addressing the problem	2 Assessing and diagnosing the problem	3 Explaining OA and its treatment	4 Managing OA (pain and negotiation of plan)	5 Supporting self-care (including promoting guidebook and MOAC-2)
Environmental context and resources 1. <i>To what extent do physical or resource factors facilitate or hinder delivering MOAC1?</i> 2. <i>Are there competing tasks and time constraints?</i> 3. <i>Are the necessary resources available to the GPs to deliver MOAC1?</i>	1/2/3 – Not known for individual practices <b>Addressed as part of the study set-up in the four intervention practices</b>				
Social influences 1. <i>To what extent do social influences facilitate or hinder delivering MOAC1?</i> 2. <i>Will they observe others delivering MOAC1?</i>		<b>Use of video-recorded replicated consultations in training</b>			

Behaviour determinant domains and <i>suggested questions</i>	Key Consultation tasks				
	1 Addressing the problem	2 Assessing and diagnosing the problem	3 Explaining OA and its treatment	4 Managing OA (pain and negotiation of plan)	5 Supporting self-care (including promoting guidebook and MOAC-2)
Emotion 1. <i>Does delivering MOAC1 evoke an emotional response?</i> 2. <i>To what extent do emotional factors facilitate or hinder delivering MOAC1?</i> 3. <i>How does emotion affect delivering MOAC1?</i>					
Behavioural regulation (action planning) 1. <i>What preparatory steps are needed to deliver MOAC1?</i> 2. <i>Are there procedures or ways of working that encourage the delivery of MOAC1?</i>	<b>1- study set-up procedures</b> <b>2- MOSAICS trial structure</b>				

Behaviour determinant domains and <i>suggested questions</i>	Key Consultation tasks				
	1 Addressing the problem	2 Assessing and diagnosing the problem	3 Explaining OA and its treatment	4 Managing OA (pain and negotiation of plan)	5 Supporting self-care (including promoting guidebook and MOAC-2)
Nature of the behaviours 1. <i>What is the proposed behaviour?</i> 2. <i>Who needs to do what differently when, where, how often and with whom?</i> 3. <i>How do they know whether the behaviour has happened?</i> 4. <i>What do they currently do?</i> 5. <i>Is this a new behaviour or an existing behaviour that needs to become a habit?</i> 6. <i>Can the context be used to prompt the new behaviour?</i> 7. <i>How long are the changes going to take?</i> 8. <i>Are there systems for maintaining long term change?</i>	1- Well defined in study protocol 2- Defined in study protocol and will be investigated in the pilot 4- Not known 5 – New behaviour 6- Yes, patient presenting with joint pain / template firing <b>Presentation of MOSAICS design and purpose of MOAC-1 (finding / selecting the “right” patients (those with OA), being positive about OA, managing pain and selling self-care)</b>				

## Appendix 4.6 Behaviour change intervention workshop programme

### Workshop 1 – attendees: Primary Health Care Team from a single practice (GPs, practice nurses, practice manager<sup>1</sup>, receptionists<sup>1</sup>) Duration: 2 hours

Time (minutes)	Activity
5	Introductions – facilitators and practice attendees
20	How is OA managed, in your practice? Mapping practice, and local community and secondary care, resources for OA (interactive session with discussion recorded on flip chart)
25	OA knowledge update on: pathophysiology, definition and diagnosis, prevalence, prognosis and patient experience of OA (didactic session with discussion)
10	Information on: the NICE OA Guideline, support for self-management, the OA Guidebook, the model OA consultation (didactic session with discussion)
5	Break and non-clinical staff leave
20	Presentation and discussion of case histories (GPs previously requested to bring). Difficulties in managing OA - what do GPs and nurses want from the sessions and what would aid them in managing OA (interactive session with issues recorded on flipchart and to be addressed in workshop 3)
25	Details of the model OA consultation - how to deliver it in day-to-day practice - GP and practice nurse roles. Aide-memoire introduced (didactic session with discussion)
10	Conclusion and outline of workshops 2 and 3. GPs given DVD of simulated patient consultation <sup>2</sup> and asked to view in preparation for workshop 2

### Workshop 2 – attendees: GPs from two practices.<sup>3</sup> Duration: 2 hours

10	Introductions – facilitators and GPs. Reflection on, and unanswered questions from, workshop 1.
20	Discussion and reflection on video-recorded simulated patient OA consultations. Comparison between current practice and model OA consultation. Agenda for skills training agreed (interactive session with “agenda” recorded on flipchart)
10	Introduction to skills training: description of purpose and methods - the GPs were asked to work as a team trying out in turn bite-sized parts of the consultation with discussion and feedback from colleagues and facilitators (didactic session with discussion)
10	Break
60	Skills training: working through the agenda set earlier. Particular emphasis on communication, use of language for giving and explaining the diagnosis and patient-centred approach (led by an experienced GP educator)
10	Reflection and conclusion. Aide-memoire discussed. Preparation for second video-recorded simulated patient consultation. <sup>4</sup> Outline of workshop 3

### Workshop 3 – attendees: GPs from two practices. Duration: 2 hours

40	Knowledge update: addressing needs identified in workshop 1 and questions from GPs, and covering: diagnosing OA clinically and “top tips” for managing OA (interactive session led by academic rheumatologist)
10	Discussion and reflection on 2nd video-recorded consultation. Agenda for skills training agreed (interactive session with “agenda” recorded on flipchart)
10	Break
50	Skills training: as for workshop 2
10	Conclusion and general reflection. Aide-memoire discussed. GPs invited to complete satisfaction questionnaires. Outline of workshop 4

### Workshop 4 – attendees: GPs and practice nurses from a single practice. Duration: 1 hour

40	Action planning on delivery of the model OA consultation in the practice. Final version of the aide-memoire agreed.
10	Presentation of baseline data on OA consultations in the practice (an OA data collection template had been installed in the practices for the six months prior to the training)
10	Conclusion and thanks. Attendance certificates issued.

## **Appendix 5.1 GP questionnaire for self-report measures (baseline)**



**K E E L E**  
UNIVERSITY



# **Management of OsteoArthritis In ConsultationS study (MOSAICS)**

## **General Practitioner Questionnaire 1**

Version 1 01/07/2011

REC Number 10/H1017/76

**Arthritis Research UK Primary Care Centre**

# **Management of OSteoArthritis In ConsultationS study (MOSAICS)**

**Please read the participant information sheet:**

**Baseline Survey and Training Evaluation Sheet: GP Information sheet (version 1 01/07/2011)**

## **Instructions for this questionnaire**

Please answer all the questions

The questions can be answered by putting a cross in the box like this



or by circling a number like this    3    4    5    6

Please write in **BLOCK CAPITALS** where appropriate

When you have finished please check that you have answered all of the questions and then return the questionnaire in the envelope enclosed. You do not need a stamp.

Please return the questionnaire in the next two weeks.

The answers you give in the questionnaire will be treated in the strictest confidence.

If you have any queries please contact the study co-ordinator Sue Hill on 01782 734706

**Thank you again for your help with this research study.**

## SECTION 1 About you

1.1. What year did you qualify as a doctor?

--	--	--	--

1.2. In what capacity are you a doctor in this practice?

Partner ☐

Salaried doctor ☐

Locum doctor ☐

Doctor in training ☐

1.3. Have you undertaken any training in musculoskeletal medicine since you qualified as a doctor?

No..... ☐

Yes..... ☐

If yes please give details.....  
↓

.....

1.4. Have you undertaken a hospital appointment in Rheumatology or Orthopaedics?

No..... ☐

Yes..... ☐

1.5. Are you employed as a GP with a special interest in musculoskeletal medicine?

No..... ☐

Yes... ☐

If yes please give details.....  
↓

.....

1.6. Are you ? Male ☐ or Female ☐

1.7. Do you have, or have ever suffered, from joint problems?

No..... ☐

Yes..... ☐



## Section 2 Your views about chronic joint problems

### INTRODUCTION - IMPORTANT PLEASE READ

We are seeking the views of GPs and nurses participating in the MOSAICS Study about chronic joint problems.

By chronic joint problems we mean joint pain and associated symptoms that have been present for more than 3 months, and that are most likely attributable to osteoarthritis.

We do not mean problems resulting from:

- A fracture
- Infection
- Inflammatory arthritis
- Gout
- Metastasis
- Following surgery

The following 4 statements are about the decisions you make when caring for patients with chronic joint problems. Please answer these questions by putting a cross in the **one box in each row** which best describes your answer.

		Strongly disagree	Disagree	Not sure	Agree	Strongly agree
2.1.	I lack the diagnostic tools or knowledge needed to effectively assess patients with chronic joint problems					
2.2.	I know exactly what to do to effectively treat patients with chronic joint problems					
2.3.	I am very comfortable treating patients with chronic joint problems					
2.4.	I am well prepared to manage chronic joint problems					

**We are interested in your own personal views of how you see chronic joint problems.**

Please indicate how much you agree or disagree with the following statements about chronic joint problems by putting a cross in one box on each line

		Totally disagree	Largely disagree	Disagree to some extent	Agree to some extent	Largely agree	Totally agree
2.5.	Mental stress can cause chronic joint problems even in the absence of tissue damage						
2.6.	The cause of chronic joint problems is unknown						
2.7.	Pain is a nociceptive stimulus, indicating tissue damage						
2.8.	A patient suffering from a severe chronic joint problem will benefit from physical exercise						
2.9.	Functional limitations associated with chronic joint problems are the result of psychosocial factors						
2.10.	Patients with chronic joint problems should preferably practice only pain free movements						
2.11.	Treatment may have been successful even if pain remains						
2.12.	A chronic joint problem indicates the presence of organic injury						
2.13.	If a chronic joint problem increases in severity, I immediately adjust the intensity of my treatment accordingly						
2.14.	If treatment does not result in a reduction in a chronic joint problem, there is a high risk of severe restrictions in the long term						
2.15.	Pain reduction is a precondition for the restoration of normal functioning						
2.16.	Increased pain indicates new tissue damage or the spread of existing damage						
2.17.	There is no effective treatment to eliminate chronic joint problems						
2.18.	Even if the pain has worsened, the intensity of the next treatment can be increased						
2.19.	If patients complain of pain during exercise, I worry that damage is being caused						
2.20.	The severity of tissue damage determines the level of pain						
2.21.	Learning to cope with stress promotes recovery from chronic joint problems						
2.22.	Exercises that may be joint straining should not be avoided during the treatment						
2.23.	In the long run, patients with chronic joint problems have a higher risk of developing severe joint impairments						

## Section 3 – Clinical scenario of patient with a chronic joint problem

Presented below is a scenario of a patient **with a chronic joint problem** who is seeing you for the first time. All questions that follow relate to the care you would give this particular patient. Think about the patient's **first consultation** with you.

**Patient** Mrs Jones, 58-year-old Prison Officer

**History** First presentation of gradually worsening bilateral knee pain over 2 years  
No history of trauma  
Pain always present when walking and after sitting, worst when climbing stairs  
No night pain.  
Managing activities of daily living. Difficulty gardening.  
Stopped going to gym – thinks was making pain worse  
Only treatment tried is ibuprofen once or twice when pain “really bad” no benefit.  
Came today finding work increasingly difficult due to the stairs  
Usually well – no comorbidities

**Medication:** Nil

**Examination** Body Mass Index 33  
Knees – no effusions. Joint tenderness upon palpation. Bilateral coarse crepitations.  
Slightly reduced flexion of the right knee  
Hips – no abnormality detected

**3.1** This patient's symptoms are: *(Please put a cross **one** box that best reflects your opinion)*

☐ Very severe    ☐ Severe    ☐ Moderate    ☐ Mild    ☐ Very mild

**3.2** It is most likely that this patient's symptoms result from joint damage that is:  
*(Please put a cross **one** box that best reflects your opinion)*

☐ Very severe    ☐ Severe    ☐ Moderate    ☐ Mild    ☐ Very mild

**3.3** What investigations will you do/order for this patient at this point?  
(please put a cross against **all** that apply)

<input type="checkbox"/> None	<input type="checkbox"/> Lab test (e.g. inflammatory markers)	<input type="checkbox"/> Special imaging (e.g. CT, MRI, bone scan)
<input type="checkbox"/> Knee x-ray	<input type="checkbox"/> X-ray of other area	<input type="checkbox"/> Synovial fluid aspirate/analysis
<input type="checkbox"/> other		

**3.4** If you crossed 'x-ray of other area' or 'other' please specify:

.....  
.....

**3.5** What diagnosis would you give to this patient at this point?

.....

3.6 Using the words you would use with the patient, **briefly** state how would you describe your diagnosis to the patient

.....

.....

.....

.....

.....

3.7 Using the words you would use with the patient, **briefly** describe what the future is likely to hold for this patient

.....

.....

.....

3.8 **At this point**, what approaches would you use to treat this patient?  
(Please cross **all** that apply)

- |  |   |   |
|--|---|---|
| <input type="checkbox"/> Education, verbal advice                    | <input type="checkbox"/> Assistive devices<br>(e.g walking aids)      | <input type="checkbox"/> Paracetamol                          |
| <input type="checkbox"/> Strengthening exercises                     | <input type="checkbox"/> Oral NSAIDS                                  | <input type="checkbox"/> Intra-articular<br>steroid injection |
| <input type="checkbox"/> Heat / ice                                  | <input type="checkbox"/> Rest   | <input type="checkbox"/> Opioids                              |
| <input type="checkbox"/> Provide written information                 | <input type="checkbox"/> Topical NSAIDS                               | <input type="checkbox"/> Use of joint<br>support              |
| <input type="checkbox"/> Capsaicin                                   | <input type="checkbox"/> TENS   | <input type="checkbox"/> General physical<br>activity         |
| <input type="checkbox"/> Avoidance of painful<br>movement / activity | <input type="checkbox"/> Shock absorbing shoes<br>or insoles          | <input type="checkbox"/> Reducing activity<br>level           |
| <input type="checkbox"/> Weight loss                                 | <input type="checkbox"/> Pacing of activities                         | <input type="checkbox"/> Nutrition                            |
| <input type="checkbox"/> Increasing activity level                   | <input type="checkbox"/> Other If you crossed 'other', please specify |   |



.....

.....

3.9 Would you be likely to **refer this patient** on to see someone else at this point?

☐

No

☐

Yes

If yes, to whom (please indicate all that apply)

☐

Orthopaedic surgeon

☐

Occupational therapist

☐

Pain clinic

☐

Dietician

☐

Local pharmacist

☐

Acupuncturist

☐

GP with a special  
interest

☐

Rheumatologist

☐

Physiotherapist

☐

Podiatrist

☐

Exercise on Prescription  
(or equivalent)

☐

Support group

☐

Other (*Please specify*).....

.....

## Section 4 – About osteoarthritis

How well informed do you feel about the following aspects of osteoarthritis?

Please circle one response for each question in this section

4.1. What causes osteoarthritis

**Not at all informed**

**Partly informed**

**Very well informed**

1

2

3

4

5

4.2. The prognosis of osteoarthritis

**Not at all informed**

**Partly informed**

**Very well informed**

1

2

3

4

5

4.3. The burden (impact on daily life) of osteoarthritis on the individual

**Not at all informed**

**Partly informed**

**Very well informed**

1

2

3

4

5

4.4. The range of treatments for osteoarthritis

**Not at all informed**

**Partly informed**

**Very well informed**

1

2

3

4

5

4.5. What people with osteoarthritis can do to self manage their condition

**Not at all informed**

**Partly informed**

**Very well informed**

1

2

3

4

5

4.6. What a GPs can do to support patients with osteoarthritis to self manage their condition

**Not at all informed**

**Partly informed**

**Very well informed**

1

2

3

4

5

## Section 5 - The NICE Osteoarthritis Guideline and its recommendations

Please circle one response for each question in this section

- 5.1. How much have you heard or read about the NICE Osteoarthritis Guideline, published in 2008?

<b>Nothing at all</b>		<b>Some</b>		<b>A lot</b>
1	2	3	4	5

- 5.2. How much do you feel that NICE is a credible source of guidance for the management of osteoarthritis?

<b>Not at all</b>		<b>Somewhat</b>		<b>A lot</b>
1	2	3	4	5

The NICE Osteoarthritis Guideline made a number of recommendations. The next questions are about some of these recommendations

- 5.3. How much have you heard or read about the recommendation that healthcare professionals should support patients with osteoarthritis to self-manage their condition?

<b>Nothing at all</b>		<b>Some</b>		<b>A lot</b>
1	2	3	4	5

- 5.3.1. Do you agree with this recommendation?

<b>Completely disagree</b>		<b>Somewhat agree</b>		<b>Completely agree</b>
1	2	3	4	5

- 5.3.2. Do you provide support for patients with osteoarthritis to self-manage their condition?

<b>Never</b>		<b>About half the time</b>		<b>Always</b>
1	2	3	4	5

- 5.3.3. If you have circled 3, 4, or 5 for the last question, how do you **ensure** that patients with osteoarthritis are supported to self-manage their condition?

.....

.....

.....

Please circle one response for each question in this section

- 5.4 How much have you heard or read about the recommendation that healthcare professionals should offer **all** patients with osteoarthritis **written information** about their condition?

Nothing at all

Some

A lot

1

2

3

4

5

- 5.4.1. Do you agree with this recommendation?

Completely disagree

Somewhat agree

Completely agree

1

2

3

4

5

- 5.4.2. Do you provide **written information** for patients with osteoarthritis?

Never

About half the time

Always

1

2

3

4

5

- 5.4.3. If you have circled 3, 4 or 5 for the last question, how do you **ensure** that patients with osteoarthritis are provided with **written information**?

.....

.....

.....

.....

- 5.4.4. If you do provide written information can you tell me some of the leaflets/ information you use – including website(s) if known ?

.....

.....

.....



Please circle one response for each question in this section

- 5.5 How much have you heard or read about the recommendation that healthcare professionals should offer **all** patients with osteoarthritis advice on **exercise and increasing physical activity**?

Not at all		Somewhat		A lot
1	2	3	4	5

- . 5.5.1. Do you agree with this recommendation?

Completely disagree		Somewhat agree		Completely agree
1	2	3	4	5

- . 5.5.2. Do you offer advice on exercise and increasing physical activity to patients with osteoarthritis?

Never		About half the time		Always
1	2	3	4	5

- . 5.5.3. If you have circled 3, 4 or 5 for the last question, how do you **ensure** that patients with osteoarthritis are offered advice to undertake exercise or increase physical activity?

.....

.....

.....

.....

- . 5.5.4. Please list what exercises and ways to increase physical activity you offer advice on?

.....

.....

.....

.....

Please circle one response for each question in this section

- 5.6. How much have you heard or read about the recommendation that healthcare professionals should offer **all** patients with osteoarthritis, if they are overweight or obese, advice on interventions to achieve **weight loss**?

<b>Nothing at all</b>		<b>Some</b>		<b>A lot</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

- 5.6.1. Do you agree with this recommendation?

<b>Completely disagree</b>		<b>Somewhat agree</b>		<b>Completely agree</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

- 5.6.2. Do you offer advice on interventions to achieve weight loss to patients with osteoarthritis, if they are overweight or obese?

<b>Never</b>		<b>About half the time</b>		<b>Always</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

- 5.6.3. If you have circled 3, 4 or 5 for the last question, how do you **ensure** that patients with osteoarthritis are offered advice on interventions to achieve **weight loss**, if they are overweight or obese?

.....

.....

.....

.....

- 5.6.4. Please list which interventions to achieve weight loss you offer advice on:

.....

.....

.....

.....

## Section 6 – Managing osteoarthritis in practice

Please circle one response for each question in this section

6.1 How much do you feel it is part of a GP's job to manage people with osteoarthritis?

**Not at all**

**Somewhat**

**A lot**

**1**

**2**

**3**

**4**

**5**

6.2 How much is managing patients with osteoarthritis a priority for you?

**Not a priority**

**A medium priority**

**A high priority**

**1**

**2**

**3**

**4**

**5**

For the next two questions please think about how you manage osteoarthritis in the consultation

6.3 Do you have enough time to manage osteoarthritis when it is the only problem being managed?

**Not enough time**

**Just enough time**

**Plenty of time**

**1**

**2**

**3**

**4**

**5**

6.4 Do you have enough time to manage osteoarthritis when there are other problems which also need to be managed?

**Not enough time**

**Just enough time**

**Plenty of time**

**1**

**2**

**3**

**4**

**5**

6.5 Do you feel confident about diagnosing osteoarthritis clinically (without the use of x-rays)?

**Not confident**

**Somewhat confident**

**Very confident**

**1**

**2**

**3**

**4**

**5**

6.6 Do you feel confident about examining peripheral joints in older patients?

**Not confident**

**Somewhat confident**

**Very confident**

**1**

**2**

**3**

**4**

**5**

6.7 Do you feel confident in prescribing medication for osteoarthritis?

**Not confident**

**Somewhat confident**

**Very confident**

**1**

**2**

**3**

**4**

**5**

6.8 Do you feel confident about supporting patients with osteoarthritis to self-manage their condition?

**Not confident**

**Somewhat confident**

**Very confident**

**1**

**2**

**3**

**4**

**5**

**Please circle one response for each question in this section**

6.9 How much do you think written information for patients with osteoarthritis helps them to better manage their condition?

<b>Not at all</b>		<b>Somewhat</b>		<b>A lot</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

6.10 How much do you think exercise and increasing physical activity by people with osteoarthritis will improve their pain?

<b>Not at all</b>		<b>Somewhat</b>		<b>A lot</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

6.11 How much do you think losing weight by people with osteoarthritis, if they are overweight or obese, will improve their pain?

<b>Not at all</b>		<b>Somewhat</b>		<b>A lot</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

6.12 When wanting to refer a patient with osteoarthritis, do you have good access to **physiotherapy** services?

<b>Very poor access</b>		<b>Reasonable access</b>		<b>Very good access</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

6.13 When wanting to refer a patient with osteoarthritis, do you have good access to **occupational therapy** services?

<b>Very poor access</b>		<b>Reasonable access</b>		<b>Very good access</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

6.14 When wanting to refer a patient with osteoarthritis, do you have good access to **rheumatology** services?

<b>Very poor access</b>		<b>Reasonable access</b>		<b>Very good access</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

6.15 When wanting to refer a patient with osteoarthritis, do you have good access to **orthopaedic** services?

<b>Very poor access</b>		<b>Reasonable access</b>		<b>Very good access</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

6.16 How much do you have a "heart-sink" reaction to patients with osteoarthritis?

Not at all

Somewhat

A lot

1

2

3

4

5

## Section 7 Participating in the MOSAICS Research Study

**What are the reasons for participating in this study?**

From the perspective of the practice:

.....

.....

.....

.....

.....

.....

.....

From your own perspective:

.....

.....

.....

.....

.....

.....

.....

**What do you feel are the potential benefits from this study?**

For the practice as a whole:

.....

.....

.....

.....

.....

.....

.....

For yourself:

.....

.....

.....

.....

.....  
.....  
.....

**Thank you**

**Now please read and, if you are happy to initial and sign the consent form on the next page and return the questionnaire in the stamped addressed envelope.**



**K E E L E**  
UNIVERSITY



**Study title** MOSAICS Baseline Survey  
and Training Evaluation

**REC number:** 10/H1017/76

**Chief investigator** Professor K Dziedzic

GP consent - version 1 01/07/2011

**Consent form**

Please initial all  
the boxes if you  
agree

1. I confirm that I have read and understood the Baseline Questionnaire and Training Evaluation Information Leaflet ( version 1 dated 01/07/2011) and am willing to take part in the survey and evaluation .....
2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason.....
3. I understand that my participation in this survey involves completing this questionnaire and, if the practice I work in is allocated to the intervention arm, completing two further questionnaires after the training .....
4. I understand that, if the practice I work in is allocated to the intervention arm, my participation involves being videoed consulting simulated patients, the recordings of which will be used for training and evaluation.....

☐
☐
☐
☐

**Please note:**

**All information held about you as part of this evaluation will be held in confidence by the Keele study team.**

**This consent form is stored separately from the completed questionnaire.**

**Name of participant (print)**

**Date**

**Signature**

.....

...../...../.....`

.....

*Study ID*

*Study ID*



## Appendix 5.2 Example of simulated patient summary as used in videos

### PATIENT SUMMARY

EMIS no. : 26865  
Name : Mrs Pauline Evans  
Age : 61 years  
D.O.B. : 15.07.1950                      NHS No. : ZZZZ 999

Address : 35 Beryl Road Little Wapping  
Post Code : W6 9SH  
Tel No :

#### ACTIVE PROBLEMS

23.3.1997 Hypertension NOS  
15.7.2006 Myocardial Infarct

---

#### SIGNIFICANT (NOT ACTIVE) PROBLEMS

None Recorded

---

#### ALLERGIES

None Recorded

---

#### HEALTH STATUS

6.9.2001 Reg Fee Claim?	:New reg.check done + claimable
6.9.2001 Weight	:62 Kg
6.9.2001 O/E height	:Height 161.3 cm
6.9.2001 Body Mass Index	:28.9
6.9.2001 Ideal Weight	:59.6 Kg
6.9.2001 BP	:140/68 mm Hg
1999 Smoking	:Stopped smoking
6.9.2001 Alcohol	:08 units/week
Diet	:- - -
6.9.2001 Exercise grading	:Enjoys light exercise
6.9.2001 Urine Protein	:Urine protein test not done
6.9.2001 Urine Glucose	:Urine glucose test not done
6.9.2001 FH:IHD<60	:No FH: Ischaemic heart Dis <60
6.9.2001 FH:IHD>60	:FH: Ischaemic heart dis. >60
6.9.2001 FH: CVA/stroke	:No FH: Stroke/TIA
6.9.2001 FH:Diabetes	:No FH: Diabetes
6.9.2001 FH: Asthma	:No FH: Asthma

---

#### PRESENT MEDICATION

	Last Issue
Repeat Prescription	
Ramipril 5mg od 84 tablets	27.11.2011
Aspirin sol. 75mg od 84 tablets	27.11.2011
Bisoprolol 5mg od 84 tablets	27.11.2011
Simvastatin 40mg od 84 tablets	27.11.2011

## Appendix 5.3 Paper version of MOSAICS template as used in videos

Prompt	Result	Date
Pain score		
Function Impact		
O/E - weight		
Body mass index		
Paracetamol Use		
Topic Nsaid Use		
Oa Info Given		
Advice - weight		
Exercise Advice		
Physio Advised		

Pain Score

A Pain|None  
B Pain|Mild  
C Pain|Moderate  
D Pain|Severe

Function Impact

A Fn|Not Limited  
B Fn|Mild Limitation  
C Fn|Moderate Limitation  
D Fn|Severe Limitation

Paracetamol Use

A Para|Tried Full Dose  
B Para|Advised Full Dose  
C Para|Decline Full Dose  
D Para|Not Appropriate  
E Para|Unknown

Topic NSAID Use

A Top|Tried Full Dose  
B Top|Advised Full Dose  
C Top|Declined Full Dose  
D Top|Not Appropriate  
E Top|Unknown

OA Info Given

A Info|Verbal  
B Info|Verbal + Written  
C Info|Not This Time  
D Info|Not Appropriate

Advice – Weight

A Wt|Verbal Advice  
B Wt|Verbal + Written  
C Wt|Not This Time  
D Wt|Not Appropriate

Exercise Advice

A Ex Verbal Advice
B Ex Verbal + Written
C Ex Not Necessary
D Ex Not This Time
E Ex Not Appropriate

Physio Advised

A Pt Offered Referral
B Pt Not Necessary
C Pt Not This Time
D Pt Not Appropriate

## **Appendix 5.4 Invite letter for self-report survey**



**K E E L E**  
UNIVERSITY



<Participant name>  
<1<sup>st</sup> Line of address>  
<2<sup>nd</sup> line of address>  
<Town/City>  
<Postcode>

Ref: study ID

Date

Dear Doctor <Participant surname>

The **MOSAICS** study:  
Management of Osteoarthritis In ConsultationS

**RE: MOSAICS Study Baseline and Training Evaluation Questionnaire.**

We would like to invite you to complete a questionnaire on your views about chronic joint problems and osteoarthritis. We are inviting you as the practice you work in is taking part in the MOSAICS study.

Enclosed is an information leaflet about the study and the questionnaire.  
We hope you will be able to spare about 20 minutes of your time to complete the questionnaire.

**All your answers will be dealt with in strictest confidence.**

We would be grateful if you could return the questionnaire in the envelope provided in the next two weeks. If you would like to know more about this study, please contact **Sue Hill**, study co-ordinator on **01782 734706**.

**Thank you very much for your help with this research study .**

Yours faithfully,

Kryzia Dziedzic PhD MCSP  
Arthritis Research UK Professor of Musculoskeletal Therapies

**Enc: Information leaflet, questionnaire, pre paid envelope.**

T: +44(0)1782 733905 F: +44(0)1782 733911  
E: primary\_care\_sciences@cphc.keele.ac.uk W: www.keele.ac.uk/research/pchs/pcmrc/

Keele University, Staffordshire, ST5 5BG, United Kingdom  
T: +44(0)1782 732000 or 621111 W: www.keele.ac.uk

Appendix 4.a.10  
Letter of Invitation-Questionnaire  
Version 1 Date 01/07/2011

## **Appendix 5.5 Participant information sheet for self-report survey**

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ARTHRITIS RESEARCH UK PRIMARY CARE CENTRE  
PRIMARY CARE SCIENCES

**Participant information sheet**  
REC Approval number 10/H1017/76  
(GP Info sheet Version 1 (01/07/2011))

**Management of OsteoArthritis in Consultations study (MOSAICS)**  
**Baseline Questionnaire and Training Evaluation Information Sheet**

We would like to invite you to help with part of the MOSAICS study: a baseline survey for, and the evaluation of, the training for the study. Before you decide you need to understand why the research is being done and what it will involve.

Please take time to read the following information carefully. Talk to others about the study if you wish. Ask us if anything is not clear or if you would like more information. Take time to decide whether or not you wish to take part.

**What is the purpose of MOSAICS training evaluation?**

The practices in the intervention arm of the MOSAICS study will be offered training on the delivery of the new approach to the assessment and treatment of osteoarthritis. We would like to know how effective the training is. We are undertaking i) a brief questionnaire before and after the training ii) video recordings of consultation with simulated patients before, during and after the training, and iii) a brief feedback session on the final day of training.

**What happens in the MOSAICS training evaluation?**

We are inviting all the general practitioners in all practices in the MOSAICS study to complete a questionnaire during the six month run-in period (before any training has taken place). In the intervention practices only we will invite all the general practitioners to complete two further questionnaires (immediately after the training and 6 months later), and to undertake simulated patient consultations, which will be video recorded.

We are inviting general practitioners in **all** the practices to complete this questionnaire, even if they will not be in an intervention practice, as we are interested in everyone's views about managing osteoarthritis, not just those who will be invited to undertake the training.

**Why have I been invited?**

You are a general practitioner in one of the practices which have agreed to take part in the MOSAICS study.

**Do I have to take part?**

No, your participation is entirely voluntary, and if you decide to take part you are free to withdraw at any time and without giving a reason. If you do decide to take part we will ask you to sign a consent form to show you have agreed to take part.

### **What will happen to me if I take part?**

We will ask you to fill in a questionnaire and return it to us in the next two weeks. If your practice is allocated to the intervention we will send you two further questionnaires after the training. We will send you a reminder questionnaire if you have not returned the questionnaires to us within 4 weeks.

In addition, if you are in one of the intervention practices we will ask you to be recorded consulting with a simulated patient on four occasions: i) before the training, ii) during the training, iii) immediately after the training and iv) 6 months after the training. We will arrange for the simulated patient to “consult” you at the surgery at a time convenient to you and we will organise the video recording of the consultation.

The videos will be viewed by researchers at the Arthritis Research UK Primary Care Centre to look at what happened during the simulated patient consultation.

The video recorded consultations may then be transcribed (a paper copy of what has been said). Both the video-recording and the transcript will be kept in a secure location and will only be accessed by researchers directly concerned with this study. **Neither the video-recording nor the paper copy will bear any information that would identify you or the simulated patient by name.** We will store the video-recording securely for up to 20 years, and after this time it will be destroyed.

### **What will I have to do?**

#### *Questionnaires*

We would like you to read the instructions which come with the questionnaire and answer all the questions – we estimate this will take about 20 minutes. We would be grateful if you could then post the questionnaire and completed consent form back to us within 2 weeks. If you then go on to undertake the training for the MOSAICS Study (intervention Practices only) you will be asked to fill in and return two post-training questionnaires when they arrive and return them within 2 weeks.

#### *Video recorded simulated patient consultations*

You will be asked to undertake a video recorded consultation with a simulated patient. We will invite you to do this on four occasions.

### **What are the possible disadvantages and risks of taking part?**

We envisage no possible disadvantages or risks of taking part, apart from the time it takes to complete the questionnaires and undertake the simulated patient consultations. Funding for professional time needed for these activities is provided by the Primary Care Research Network.

### **What are the possible benefits of taking part?**

This study may not directly help you but you will be helping us evaluate the training and help us to decide if we need to alter or improve any part of the training for use in further research and service development.

### **What if there is a problem?**

If you have a concern about any aspect of this study you should contact Sue Hill on 01782 734706 and we will do our best to answer your questions.



**Will my taking part in this study be kept confidential?**

All information that is collected during the course of the study will be treated by the study team in the strictest confidence. Your name and address, and any other personal details, are kept on a secure database, separate from the data collected. The only link is a study number we give you that is also kept secure.

**What will happen to the results of the study?**

They will be published in an academic journal and we will also present the findings at meetings, both locally and internationally. We will send you a copy of the results.

**Who is funding and organising the research?**

This study is funded by Arthritis Research UK and the National Institute for Health Research (part of the NHS) and is run from the Arthritis Research UK Primary Care Centre at Keele University. The study is part of a PhD programme which is being supervised by Professor Krysia Dziedzic (Arthritis Research UK Professor of Musculoskeletal Therapies at Keele University).

**Who has reviewed the study?**

The study has been reviewed by international experts and by North West 1 Research Ethics Committee- Cheshire.

**Contact for further information**

If you need any further information about the study please contact Sue Hill (01782 734706). You can also obtain general information on research from National Research Ethics Service, National Patient Safety Agency, 4 - 8 Maple Street, London, W1T 5HD T 020 7927 9898 - [www.nres.npsa.nhs.uk/](http://www.nres.npsa.nhs.uk/)

## **Appendix 5.6 Reminder letter for self-report survey**



K E E L E  
UNIVERSITY



<Participant name>  
<1<sup>st</sup> Line of address>  
<2<sup>nd</sup> line of address>  
<Town/City>  
<Postcode>

Ref: study ID

Date

Dear Doctor <Participant surname>

The **MOSAICS** study:  
Management of Osteoarthritis In ConsultationS

**RE: MOSAICS Study Baseline and Training Evaluation Questionnaire.**

I am writing to remind you about the questionnaire we recently sent to you.

So far the researchers don't seem to have received a reply from you, but we are still very interested in your response. We have enclosed another copy of the questionnaire we recently sent. We know that you may be busy, but it would be very helpful to us if you could spare some of your time to fill in the questionnaire. The questionnaire should take about 20 minutes to complete.

**All your answers will be dealt with in strictest confidence.**

We would be grateful if you could return the questionnaire in the envelope provided in the next two weeks. **You do not need a stamp.** If you have any questions about the questionnaire, or require another copy posting, then please contact **Sue Hill**, study co-ordinator on **01782 734706**.

**If you have returned your questionnaire within the last few days, please accept our thanks and we apologise for troubling you again.**

**Thank you very much for your help.**

Yours faithfully,

Kryzia Dziedzic PhD MCSP  
Arthritis Research UK Professor of Musculoskeletal Therapies

**Enc: Information leaflet, questionnaire, pre paid envelope.**

T: +44(0)1782 733905 F: +44(0)1782 733911  
E: primary\_care\_sciences@cphc.keele.ac.uk W: www.keele.ac.uk/research/pchs/pcmrc/

Keele University, Staffordshire, ST5 5BG, United Kingdom  
T: +44(0)1782 732000 or 621111 W: www.keele.ac.uk

Appendix 4.a.8  
Reminder Letter  
Version 1 Date 01/07/2011



**Appendix 5.7 Ethics committee letter of approval for MOSAICS trial  
(including GP self-report survey)**

## **North West 1 Research Ethics Committee – Cheshire**

Research Ethics Office  
Barlow House  
3rd Floor  
4 Minshull Street  
Manchester  
M1 3DZ

Telephone: 0161 625 7821  
Facsimile:

26 October 2010

Professor Krysia Dziedzic  
Arthritis Research UK Professor of Musculoskeletal Therapies  
Arthritis Research UK Primary Care Centre  
Primary Care Sciences  
Keele University  
Staffordshire  
ST5 5BG

Dear Professor Dziedzic

**Study Title:** Management of Osteoarthritis in Consultations Study:  
the development of a complex intervention in primary  
care (MOSAICS)  
**REC reference number:** 10/H1017/76

The Research Ethics Committee reviewed the above application at the meeting held on 14 October 2010. Thank you for attending to discuss the study.

### **Ethical opinion**

The Chair welcomed you, Dr Claire Jinks and Ms June Handy to the North West 1 Research Ethics Committee – Cheshire. The Committee members introduced themselves and asked you to provide a short summary of the study.

The Committee queried whether GP's would have enough time and staff to take part in this study. You clarified that a consensus has been done and GPs and Osteoarthritis patients have seen the model consultation and have been asked for their advice. They are hoping to offer 2 days training for the GPs and 4 days for the practice nurses. You clarified that GP's and patients have seen the model consultation and have been asked to give an opinion. You are working with the GPs to take the project forward.

You clarified that practices are used to these sorts of studies and previous studies have offered GP services.

You explained for the Committee that anxiety and depression will be recorded in questionnaires but this is not specifically being looked at as part of this study.

You pointed out that there had been an omission in the Information Sheet relating to qualitative interviews, if a participant travels to another site to be interviewed they will receive travel expenses. The additional details were handed to the co-ordinator.

The members of the Committee present gave a favourable ethical opinion of the above research on the basis described in the application form, protocol and supporting

documentation, **subject to the conditions specified below.**

### **Ethical review of research sites**

The favourable opinion applies to all NHS sites taking part in the study, subject to management permission being obtained from the NHS/HSC R&D office prior to the start of the study (see "Conditions of the favourable opinion" below).

The Committee has not yet been notified of the outcome of any site-specific assessment (SSA) for the non-NHS research site(s) taking part in this study. The favourable opinion does not therefore apply to any non-NHS site at present. I will write to you again as soon as one Research Ethics Committee has notified the outcome of a SSA. In the meantime no study procedures should be initiated at non-NHS sites.

### **Conditions of the favourable opinion**

The favourable opinion is subject to the following conditions being met prior to the start of the study.

**Management permission or approval must be obtained from each host organisation prior to the start of the study at the site concerned.**

*For NHS research sites only, management permission for research ("R&D approval") should be obtained from the relevant care organisation(s) in accordance with NHS research governance arrangements. Guidance on applying for NHS permission for research is available in the Integrated Research Application System or at <http://www.rdforum.nhs.uk>. Where the only involvement of the NHS organisation is as a Participant Identification Centre, management permission for research is not required but the R&D office should be notified of the study. Guidance should be sought from the R&D office where necessary.*

*Sponsors are not required to notify the Committee of approvals from host organisations.*

### **Other conditions specified by the REC**

- a. Please revise the Information Sheet relating to qualitative interviews to include the travel expenses information and submit the revised version to the Co-ordinator.
- b. Please revise the Consent Forms to include the following standard paragraph which should be included on all Consent Forms 'I understand that relevant sections of my medical notes and data collected during the study maybe looked at by individuals from [company name] from regulatory authorities or from the NHS Trust, where it is relevant to my taking part in this research. I give permission for these individuals to have access to my medical records.'

**It is responsibility of the sponsor to ensure that all the conditions are complied with before the start of the study or its initiation at a particular site (as applicable).**

**You should notify the REC in writing once all conditions have been met (except for site approvals from host organisations) and provide copies of any revised documentation with updated version numbers.**

## Approved documents

The documents reviewed and approved at the meeting were:

Document	Version	Date
Interview Schedules/Topic Guides	Appendix 4.d.3 - Interview Guide Patient MOAC 1 - 1	01 September 2010
Interview Schedules/Topic Guides	Appendix 4.d.9 - Patient Group Interview MOAC 2 - 1	01 September 2010
Interview Schedules/Topic Guides	Appendix 4.d.15 - patient Interview Guide MOAC 3 - 1	01 September 2010
Interview Schedules/Topic Guides	Appendix 4.e.4 - GP Interview Guide MOAC 1 - 1	01 September 2010
Interview Schedules/Topic Guides	Appendix 4.e.6 - Nurse Interview Guide MOAC 2 - 1	01 September 2010
Interview Schedules/Topic Guides	Appendix 4.e.7 - Manager/Administration Interview Guide - 1	01 September 2010
Interview Schedules/Topic Guides	Appendix 4.e.13 - HCP M3 Interview Guide - 1	01 September 2010
Participant Information Sheet: Appendix 4.b.3.2 - MCQ	1	01 September 2010
Letter of invitation to participant	Appendix 2.1 - Population Survey - 1	01 September 2010
Letter of invitation to participant	Appendix 4.b.2 - MCQ (1) - 1	01 September 2010
Letter of invitation to participant	Appendix 4.b.2.2 - MCQ (2) - 1	01 September 2010
Letter of invitation to participant	Appendix 4.d.6 - Patient invitation letter group interview MOAC 2 - 1	01 September 2010
Letter of invitation to participant	Appendix 4.d.12 - Patient invitation letter and reply slip, interview MOAC 3 - 1	01 September 2010
Letter of invitation to participant	Appendix 4.e.2 - HCP Interview Invitation Letter & Reply Slip - 1	01 September 2010
Letter of invitation to participant	Manager/Administrator Interview invitation letter + reply slip - 1	01 September 2010
Letter of invitation to participant	Appendix 4.e.11 - HCP M3 Interview Invitation letter & Reply Slip - 1	01 September 2010



Investigator CV	Krysia Dziedzic - 1	08 September 2010
Investigator CV	Mark Pocheret	17 September 2010
Investigator CV	Andrew Finney	16 September 2010
Investigator CV	John Edwards	22 September 2010
Participant Consent Form: Appendix 4.e.5 - HCP Interview Consent Form (All)	1	01 September 2010
Participant Consent Form: Appendix 2.3 - Population Survey	1	01 September 2010
Participant Consent Form: Appendix 4.d.10 - Patient consent form group interview MOAC 2	1	01 September 2010
Participant Consent Form: Appendix 4.e.1.2 - Nurse Consent Form Observation MOAC 2	1	01 September 2010
Questionnaire: Appendix 2.3 - Population Survey	1	01 September 2010
Questionnaire: Appendix 4.b.4.1- MOSAICS Consultations questionnaire (Baseline)	1	01 September 2010
Questionnaire: Appendix 4.b.4.2 - MOSAICS Consultations questionnaire (Follow-up)	1	01 September 2010
Letter from funder		01 August 2008
Appendix C - MOSAICS Design Overview Table 1	1	01 September 2010
Appendix 3.4 MOSAICS OA Handbook		
Appendix 4.b.5 - MCQ Reminder Postcard (GP & Keele)	1	01 September 2010
Appendix 4.b.10 - MCQ Follow-up Reminder Postcard (Keele)	1	01 September 2010
Appendix 4.d.8 - Patient interview Reply Slip MOAC 2	1	01 September 2010
Email to clarify Chief Investigator		29 September 2010
Participant Information Sheet: Appendix 4.b.3 - MCQ	1	01 September 2010
Participant Consent Form: Appendix 4.d.4 - Interview Consent Form MOAC 1	1	01 September 2010
Participant Consent Form: Appendix 4.e.1.1 - Patient Consent Form: Observation of MOAC 2	1	01 September 2010
Protocol	1	01 September 2010
Appendix 4.b.9 - MCQ Follow-up Letter (Keele)	1	01 September 2010
Evidence of insurance or indemnity		28 July 2010
Letter from Statistician	1	21 September 2010
Referees or other scientific critique report	Reviewer reference numbers 1 - 9 excluding 5	30 November 2007
REC application	3.0	24 September 2010
Participant Information Sheet: Appendix 4.e.10 Manager / Administrator interview information leaflet	1	01 September 2010
Participant Information Sheet: Appendix 2.2 - Population Survey	1	01 September 2010
Participant Information Sheet: Appendix 4.d.13 - Patient	1	01 September

Information Leaflet MOAC 3		2010
Participant Information Sheet: Appendix 4.e.12 - HCP M3 Interview information leaflet	1	01 September 2010
Participant Information Sheet: Appendix 4.d.7 - Patient Information Leaflet - Group Interview MOAC 2	1	01 September 2010
Participant Information Sheet: Appendix 4.e.3 - HCP Interview Information Leaflet	1	01 September 2010
Participant Consent Form: Appendix 4.d.16 - Patient Interview Consent Form MOAC 3	1	01 September 2010
Participant Consent Form: Appendix 4.e.9 - manager & Administrator Consent Form	1	01 September 2010
Covering Letter		24 September 2010
Summary/Synopsis	Appendix B. Flowchart A MOSAICS design overview - 1	01 September 2010
Summary/Synopsis	Appendix 1 - Medical Record Review - Flowchart 1 - 1	01 September 2010
Summary/Synopsis	Appendix 2 - Population survey - Flowchart 2 - 1	01 September 2010
Summary/Synopsis	Appendix 3.1 - Implementation Flowchart 3a (Control Practices) - 1	01 September 2010
Summary/Synopsis	Appendix 3.2 - Implementation Flowchart 3b (Intervention Practices) - 1	01 September 2010
Summary/Synopsis	Appendix 3.3 - Implementation Flowchart 3c (Intervention Practices) - 1	01 September 2010
Summary/Synopsis	Appendix 4.b.1 - MOSAICS Consultations questionnaire MCQ Flowchart 4b - 1	01 September 2010
Summary/Synopsis	Appendix 4.d - Flowchart 4.d Patient Experiences of MOAC 1 - 1	01 September 2010
Summary/Synopsis	Appendix 4.d.5 - Flowchart 4.d.5 for Patient Experiences of MOAC 2	01 September 2010
Summary/Synopsis	Appendix 4.d.11 - Flowchart 4.d.11 Patient Experiences of MOAC 3 - 1	01 September 2010

Summary/Synopsis		
Summary/Synopsis	Appendix 4 e.1 - Flowchart 4 e Embedding new intervention in practices - 1	01 September 2010
Letter from Sponsor		21 September 2010
Qualitative Research support letter		21 September 2010
Appendix D - MOSAICS Eligibility Criteria, Table 2	1	01 September 2010
Appendix 1.1 - Joint Pain and OZ Consultation Template	1	01 September 2010
Appendix 2.4 - Population Survey: Reminder letter of invitation	1	01 September 2010
Appendix 3.5 MOAC 2 Nurse Case Report Form	1	01 September 2010
Appendix 4.b.6 - MCQ Reminder Letter (GP & Keele)	1	01 September 2010
Appendix 4.b.11 - MCQ Follow-up Reminder Letter (Keele)	1	01 September 2010
Appendix 4.b.7 - MCQ Follow-up Minimum Data Collection Letter (MDC)	1	01 September 2010
Appendix 4.b.8 - MCQ Follow-up Minimum Data Collection form (MDC)	1	01 September 2010

### **Membership of the Committee**

The members of the Ethics Committee who were present at the meeting are listed on the attached sheet.

Dr Jane Richardson declared that she knows the research team in this study and also knows about the study but does not have any interest in the study.

Mr Jonathan Deans declared that he knows a member of the research team on item in this study but does not have any knowledge or interest in the study.

### **Statement of compliance**

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees (July 2001) and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

### **After ethical review**

Now that you have completed the application process please visit the National Research Ethics Service website > After Review

You are invited to give your view of the service that you have received from the National Research Ethics Service and the application procedure. If you wish to make your views known please use the feedback form available on the website.

The attached document "After ethical review – guidance for researchers" gives detailed guidance on reporting requirements for studies with a favourable opinion, including:

- Notifying substantial amendments

- Adding new sites and investigators
- Progress and safety reports
- Notifying the end of the study

The NRES website also provides guidance on these topics, which is updated in the light of changes in reporting requirements or procedures.

We would also like to inform you that we consult regularly with stakeholders to improve our service. If you would like to join our Reference Group please email [referencegroup@nres.npsa.nhs.uk](mailto:referencegroup@nres.npsa.nhs.uk).

**10/H1017/76**

**Please quote this number on all correspondence**

With the Committee's best wishes for the success of this project

Yours sincerely

**Mr Jonathan Deans**  
**Chair**

Email: [Shehnaz.ishaq@northwest.nhs.uk](mailto:Shehnaz.ishaq@northwest.nhs.uk)

Enclosures: List of names and professions of members who were present at the meeting and those who submitted written comments  
"After ethical review – guidance for researchers"

Copy to: Dr Mark Porcheret  
Arthritis Research UK Primary Care Centre  
Primary Care Sciences  
Keele University  
Keele  
ST5 5BG

Ms June Handy  
Arthritis Research UK Primary Care Centre  
Primary Care Sciences  
Keele University  
Keele  
ST5 5BG

Rhian Hughes  
Arthritis Research UK Primary Care Centre  
Primary Care Sciences  
Keele University  
Keele  
ST5 5BG

Ms Nemonie Marriott  
Stoke-on-Trent PCT  
London House  
4<sup>th</sup> Floor  
Hide Street  
Stoke-on-Trent, ST4 1NF

# North West 1 Research Ethics Committee – Cheshire

## Attendance at Committee meeting on 14 October 2010

### Committee Members:

<i>Name</i>	<i>Profession</i>	<i>Present</i>	<i>Notes</i>
Mrs Maureen Benbow	Senior Lecturer	Yes	
Dr Nick Bronnert	GP	Yes	
Rev'd Steve Burmester	Lay Member	Yes	
Mr Jonathan Deans	Consultant ENT Surgeon	Yes	
Dr Sue Elves	Consultant Psychologist	Yes	
Mrs Elizabeth Gordon	Lay Member	Yes	
Mr Ezzat Kozman	Consultant Member	Yes	
Mrs Jan Makinson	Committee Member	No	
Dr Noel Murphy	Consultant Paediatrician	Yes	
Mrs Janet Petty	Nurse Member	No	
Dr Jane Richardson	University Lecturer	Yes	
Mrs Pam Rushworth	Pharmacist Member	No	
Dr Lenny Thornton	Consultant Member	No	
Mr Peter Ward	Lay member	Yes	
Mrs Jean Welch	Lay Member	No	
Mrs Ann Williams	Lay Member	Yes	

### Also in attendance:

<i>Name</i>	<i>Position (or reason for attending)</i>
Miss Shehnaz Ishaq	Co-ordinator
Mrs Victoria Wilde	Assistant Co-ordinator

## **Appendix 5.8 Oxford hypertension study questionnaire**



## Centre For Evidence-Based Medicine

and the

Dept of Primary Care, University of Oxford



We are trying to learn how information on hypertension management is filtered down to clinicians in general practice. We also want to find out how this information is applied in practice and want to learn about best practice in this area.

**PLEASE ANSWER THE FOLLOWING QUESTIONS**

### **I. About you and Your Practice**

1 What year did you qualify as a doctor? \_\_\_\_\_

2. Are you a general practitioner?  
(mark only one)

☐ Yes

☐ No

3. If you answered YES how large is your practice list in terms of numbers of patients to the nearest \_\_\_\_\_ thousand ?

4. If you are not a general practitioner what speciality do you work in

Cardiology ☐

General Medicine ☐

Other ☐ Please Specify: \_\_\_\_\_  
\_\_\_\_\_



## MOSAICS GP Training Evaluation

We are interested in your evaluation of all the training sessions (the one with your practice, the simulated patient consultations and the two sessions on the consultation) and would like your views.

Please rate the following:

	Strongly Disagree	Disagree	Agree	Strongly Agree
I enjoyed the training sessions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The training has helped me to better manage OA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The training covered a lot of ground I already knew	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The training has helped with other aspects of my practice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The trainers were proficient in delivering the sessions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I would recommend these training sessions to a colleague	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Too Little	About Right	Too detailed
The content relating to OA knowledge was:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The content relating to managing OA in the consultation was:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

How confident do you now feel about:	Not confident <b>1</b>	<b>2</b>	Somewhat confident <b>3</b>	<b>4</b>	Very confident <b>5</b>
Diagnosing OA clinically	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Explaining OA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Promoting or affirming self-management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Offering the OA Guidebook	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Promoting the nurse-led OA clinic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**PTO**



We would like to know which parts of the training you felt were most useful in getting you ready for delivering the new approach in the consultation. Please comment below:

Should we have included anything else?

We are going to offer a shorter version of the training to the control practices at the end of the study. We would like your opinion as to which parts we should include and which we could leave out. Please comment below:

INCLUDE

LEAVE OUT

Any other comments?

**Thank you. Please return to any member of the MOSAICS team**

## II. Blood pressure measurement

5a. How much have you heard or read about the recommendation that blood pressure based on **home/self monitoring treatment** should be adjusted downwards by 10/5 mmHg? (*mark one number*)

1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nothing at all		Some		A lot

5b. Do you agree with this recommendation? (*mark one*)

- ☐ No
- ☐ unsure - I have enough information but I have not yet decided
- ☐ unsure - I need more information to decide.
- ☐ yes

5c. How do you provide self-monitoring of blood pressure in your practice (mark one)

- ☐ Recommend to all hypertensive patients
- ☐ Offer to all adults but do not encourage it
- ☐ Offer only at patients' request
- ☐ Recommend for high risk individuals only
- ☐ Do not offer or recommend self-monitoring
- ☐ Other: \_\_\_\_\_

6a. How much have you heard or read about the recommendation to **measure blood pressure in both arms** when making the initial diagnosis of hypertension? (*mark one number*)

1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nothing at all		Some		A lot

6b. Do you agree with this recommendation? (mark one)

- ☐ No
- ☐ unsure - I have enough information but I have not yet decided
- ☐ unsure - I need more information to decide.
- ☐ yes

6c. When making the initial diagnosis of hypertension do you measure blood pressure in both arms?  
(mark one)

Never	Less than half the time	More than half the time	Always
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If you answered Never go to question 7a

6d. If you do find a difference do you measure subsequent blood pressures in arms which had the higher value?  
(mark one)

Never	Less than half the time	More than half the time	Always
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6e. If you answered **Always** or **More than half the time** to the last question how do you ensure that patients have their blood pressures measured in the same arm with the higher value?

---

---

### III. Lifestyle measures

7a. How much have you heard or read about the recommendation to provide **verbal** advice on lifestyle measures for all newly diagnosed hypertensive patients? (mark one number)

1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nothing at all		Some		A lot

7b. Do you agree with this recommendation? (mark one)

- ☐ No
- ☐ unsure - I have enough information but I have not yet decided
- ☐ unsure - I need more information to decide.
- ☐ yes

7c. How do you provide **verbal** information for newly diagnosed hypertensive patients? (mark one)

- ☐ Provide information to all hypertensive patients
- ☐ Offer information to all adults but do not encourage it
- ☐ Offer information only at patients' request
- ☐ Recommend measures for high risk individuals only
- ☐ Do not offer or recommend verbal information
- ☐ Other: \_\_\_\_\_

8a. How much have you heard or read about the recommendation to provide **written** advice on lifestyle measures for all newly diagnosed hypertensive patients? (mark one number)

1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nothing at all		Some		A lot

8b. Do you agree with this recommendation? (mark one)

- ☐ No
- ☐ unsure - I have enough information but I have not yet decided
- ☐ unsure - I need more information to decide.
- ☐ yes

8c. How do you provide **written** information for newly diagnosed hypertensives (mark one)

- ☐ Aim to provide information to all hypertensive patients
- ☐ Offer information to all adults but do not encourage it
- ☐ Offer information only at patients' request
- ☐ Recommend measures for high risk individuals only
- ☐ Do not offer or recommend written information
- ☐ Other: \_\_\_\_\_

8d. How do you currently ensure that all patients receive **written** information?

.....

.....

8e. Which of the following do you offer **written** lifestyle information for

**Written**

- |                            |                              |                             |
|----------------------------|------------------------------|-----------------------------|
| Weight reduction           | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Eating plan                | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Dietary Sodium restriction | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Physical activity          | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Alcohol moderation         | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

8f. If you do use written lifestyle measures can you tell us some of the ones you use – including website(s) if known.

- i).....
- ii).....

#### IV. Treatment of High blood pressure

9a. How much have you heard or read about the recommendation to **review patients with mild hypertension annually** even though they are not receiving treatment? (*mark one number*)

- |                          |                          |                          |                          |                          |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 1                        | 2                        | 3                        | 4                        | 5                        |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Nothing at all           |                          | Some                     |                          | A lot                    |

9b. Do you agree with this recommendation? (*mark one*)

- ☐ No
- ☐ unsure - I have enough information but I have not yet decided
- ☐ unsure - I need more information to decide.
- ☐ yes

9c. Do you review patients with mild hypertension not receiving treatment annually? (*mark one*)

- |                          |                            |                            |                          |
|--------------------------|----------------------------|----------------------------|--------------------------|
| Never                    | Less than half the<br>time | More than half the<br>time | Always                   |
| <input type="checkbox"/> | <input type="checkbox"/>   | <input type="checkbox"/>   | <input type="checkbox"/> |

If you answered Never go to question 10 a

9d. If you answered **Always or More than half the time** to the last question how do you ensure that patients are reviewed annually?

---

---

10a. How much have you heard or read about the recommendation to **prescribe statin therapy for primary prevention in** people with a high blood pressure who have a 10 year CVD risk  $\geq 20\%$ ? (*mark one number*)

- |                          |                          |                          |                          |                          |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 1                        | 2                        | 3                        | 4                        | 5                        |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Nothing at all           |                          | Some                     |                          | A lot                    |

10b. Do you agree with this recommendation? (*mark one*)

- ☐ No
- ☐ unsure - I have enough information but I have not yet decided
- ☐ unsure - I need more information to decide.
- ☐ yes

10c. How often do you formally **assess CVD risk in newly diagnosed patient with high blood pressure**?  
(mark one)

Never	Less than half the time	More than half the time	Always
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If you answered Never go to question 11a

11d. If you answered **Always or More than half the time** to the last question how do you ensure that patients with high blood pressure have their CVD risk measured?

---



---

10e. Do you discuss CVD risk with newly diagnosed hypertensive patients when making treatment decisions?

Never	Less than half the time	More than half the time	Always
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

11a. How much have you heard or read about the **evidence that in unselective hypertensive populations, no one class of agents is any more effective at lowering BP than another?** (mark one number)

1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nothing at all		Some		A lot

11b. Do you agree with this evidence? (mark one)

- ☐ No
- ☐ unsure - I have enough information but I have not yet decided
- ☐ unsure - I need more information to decide.
- ☐ yes

11c. How much do you agree or disagree with the each of the following statements about hypertensive treatment (please circle one for each row)

		Strongly agree		Neutral/ unsure		Strongly disagree
A	Drug therapy should normally begin with a low-dose thiazide type diuretic.	5	4	3	2	1
B	Angiotensin Receptor Blockers have no effect when added to an ACE inhibitor.	5	4	3	2	1
C	Loop diuretics have no place in the routine management of hypertension.	5	4	3	2	1
D	The best way to assess patient compliance is to ask them	5	4	3	2	1
E	Patients with high blood pressure should have their blood pressure measured every 3 months	5	4	3	2	1

12a. How much have you heard or read about **the recommendation to reduce blood pressure to 140/90 mmHg or below?**  
(mark one number)

1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nothing at all		Some		A lot

12b. Do you agree with this recommendation? (mark one)

- ☐ No
- ☐ unsure - I have enough information but I have not yet decided
- ☐ unsure - I need more information to decide.
- ☐ yes

12c. The NICE Guideline on hypertension suggests that: "The aim of blood pressure medication is to reduce blood pressure to 140/90 mmHg or below". Given BP measurements will vary between occasions, what percent of BP measurements in a patient would you aim to have below a diastolic of 90mm Hg?  
(mark one)

10%	30%	50%	70%	90%
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## V. Monitoring of blood pressure treatment

Any measurement varies from day to day. In a person with hypertension on stable treatment, what do you think the 95% range for the following measure would be?

13. If the systolic blood pressure is 130 mmHg, it might vary from \_\_\_\_\_ mm Hg to \_\_\_\_\_ mm Hg in different measurements over several weeks.

14. If the diastolic blood pressure is 80 mmHg, it might vary from \_\_\_\_\_ mm Hg to \_\_\_\_\_ mm Hg in different measurements over several weeks.

15. To bring down someone's blood pressure you have started an ACE inhibitor. After starting treatment how long would you need to wait achieve the full effect on blood pressure?

The full effect would occur by \_\_\_\_\_ (days)

---

***Thank you for your help in completing this questionnaire.***

***We are interested in written materials that you find helpful for patients, both your own or referenced. If possible could you send materials by email to .....***

## **Appendix 5.9 Learner reactions questionnaire**





## MOSAICS GP Training Evaluation

We are interested in your evaluation of all the training sessions (the one with your practice, the simulated patient consultations and the two sessions on the consultation) and would like your views.

Please rate the following:

	Strongly Disagree	Disagree	Agree	Strongly Agree
I enjoyed the training sessions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The training has helped me to better manage OA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The training covered a lot of ground I already knew	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The training has helped with other aspects of my practice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The trainers were proficient in delivering the sessions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I would recommend these training sessions to a colleague	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Too Little	About Right	Too detailed
The content relating to OA knowledge was:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The content relating to managing OA in the consultation was:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

How confident do you now feel about:	Not confident <b>1</b>	<b>2</b>	Somewhat confident <b>3</b>	<b>4</b>	Very confident <b>5</b>
Diagnosing OA clinically	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Explaining OA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Promoting or affirming self-management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Offering the OA Guidebook	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Promoting the nurse-led OA clinic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**PTO**

We would like to know which parts of the training you felt were most useful in getting you ready for delivering the new approach in the consultation. Please comment below:

Should we have included anything else?

We are going to offer a shorter version of the training to the control practices at the end of the study. We would like your opinion as to which parts we should include and which we could leave out. Please comment below:

INCLUDE

LEAVE OUT

Any other comments?

**Thank you. Please return to any member of the MOSAICS team**

## **Appendix 5.10 Summary of issues for simulated patient scenario**

### **Simulated patient scenarios – key issues for inclusion in scenarios**

#### **BELIEFS ATTITUDES EXPECTATIONS**

- Understanding of OA and its prognosis
  - Beliefs about cause of OA / pain, and its treatment
    - Joint as a machine – wear and tear
    - Inevitable part of ageing
    - Same as RA
    - Nothing can be done
    - Connection to past injury / sport / occupation
    - Effect of psychological factors – depression / catastrophising
- Beliefs about / attitudes to self-management of OA
  - Expectation is for referral for surgery
  - Use of CAMS
  - Passive response to pain – external locus of control – not my responsibility to make me better
  - Already doing it and not helping
  - Wish for verification of what they are doing
  - Reached the end of the line with what they are doing – so wanting medical help and support from GP / nurse
  - Not enough time – other priorities
  - Interference in daily life – other duties / roles / obligations
- Weight loss
  - Belief that losing weight will not help OA symptoms
  - Overweight but does not want to lose weight (low importance)
  - Unrealistic goals for losing weight (over optimistic)
  - Positive experience that losing weight helped the pain
  - Belief that excess weight causes joint problems and so losing weight helps
- Exercise
  - Unrealistic goal for exercise (e.g. attending gym x2 / week) – overzealous and not paced exercise / activity
  - Does not like “formal” exercise (e.g. gyms) but does exercise a lot in the course of everyday life
  - Worried that exercise might be harmful, especially if have a heart problem
  - Does not believe exercise will help as other expectations (e.g. joint replacement, medication)

- Belief that keeping the joint moving is good – use it or lose it
- Belief that exercise is bad for joint problems – wear and tear – why should I exercise when my knee hurts – pain = harm – fear avoidance
- Holds both beliefs above – ambiguity towards exercise
- Although some function affecting – going up hills / stairs – has found ways round this
- Pain management
  - Not keen on taking tablets
    - Not a tablet person
    - Only so many painkillers for a lifetime (use of analgesia bank) -
    - Side effects in past
    - Not helpful in past
      - Not used optimally
      - Used optimally but still not effective
  - Unrealistic goals – to be pain free / cured
  - Belief in CAMS and not painkillers

#### **CURRENT ACTIVITY**

- Weight loss
  - Eats a healthy / low calorie diet and cannot lose weight

#### **MEDICAL**

- Weight loss
  - Unable to lose weight as unable to exercise due to joint pain / other problem such as heart disease or respiratory problem
- Exercise
  - Unable to exercise due to joint pain or another problem such as heart disease or respiratory problem
- Pain management
  - Interaction with other medication

#### **SOCIAL**

- Weight loss
  - Problems with being able to afford healthy / low calorie food / attending slimming club

#### **EMOTIONAL RESPONSE TO PAIN**

- Anger
- Frustration
- Depression

- Anxiety

## **Appendix 5.11 Scenario for simulated patients A and B**

### **Scenario A&B – Simulated Patient Narrative**

#### **Demographic**

Male or female, aged 65-70. Normal body weight

#### **Your main problem**

Knee pain for 5 years (A) or hip pain for 3 years (B)  
Some pain in other joints, especially back and hand, at base of thumb  
Pain is worse with walking, stairs and steps  
Sometimes pain in bed, interfering with sleep  
Stiffness of affected joint especially after sitting a while but no prolonged stiffness in the mornings  
Pain limits recreational and/or occupational activities (invent)  
Pain has worsened a lot recently for no obvious reason

#### **Remedies you have tried**

Paracetamol and Ibuleve occasionally but not really helping  
Glucosamine for several months but no real effect

#### **Other medical problems**

You had a heart attack 5 years ago and recovered well. You don't ever have any chest pain now but take care not to over-exert yourself  
You also have high blood pressure controlled by tablets

#### **Prescribed medicines**

You will have a list of these

#### **General ideas, concerns, expectations**

You think your pain and stiffness are "wear and tear" and will just get worse  
The joint is wearing out due to previous sports, work, etc (invent)  
One of the GPs told you previously that nothing can be done  
You want to be referred to an orthopaedic surgeon to consider a joint replacement

#### **Ideas, concerns, attitudes about exercise**

You worry that starting to exercise at this time of life is unsafe, especially following a heart attack and with high blood pressure  
It isn't easy to exercise near home (invent reason – either as hilly or you feel unsafe out and about)  
You think exercise will just wear out joints sooner

You have tried to walk more but this just worsens the pain  
You don't like the idea of a gym – they are for youngsters and not geared up for older people

### **Guidebook (for nurse consultations only)**

You have had a look at the guidebook your GP gave you and have skimmed through some bits of the text.

### **General guidance**

- It is the job of the GP or nurse to question you sympathetically and gain an understanding of all these issues before working out an action plan with you and possibly giving you some advice:
- Don't offer lots of information without being asked
- But don't be deliberately obstructive or misleading in your answers
- React as you normally would to whatever way you are being treated by the GP or nurse
- Try to focus on how you are made to feel and what words, tone, expression or action was helpful or unhelpful to you – you may be asked this by the facilitator

### **Adding your biographical details**

Please take time to develop your scenario into a real patient by adding detail that you will find comfortable and easy to relate. Items to include are:

- Previous and/or present occupation
- Previous sports
- Hobbies
- Voluntary or other activities
- Spouse, children, grand-children as appropriate
- Type of house you live in
- Locality and local facilities
- Etc

## **Appendix 5.12 Scenario for simulated patients C and D**

### **Scenario C&D – Simulated Patient Narrative**

#### **Demographic**

Male or female, aged 65-70. Somewhat overweight

#### **Your main problem**

Knee pain for 5 years (C) or hip pain for 3 years (D)  
Some pain in other joints, especially back and hand, at base of thumb  
Pain is worse with walking, stairs and steps  
Sometimes pain in bed, interfering with sleep  
Stiffness of affected joint especially after sitting a while but no prolonged stiffness in the mornings  
Pain limits recreational and/or occupational activities (invent)  
Pain has worsened a lot recently for no obvious reason

#### **Remedies you have tried**

Paracetamol and Ibuprofen tablets bought from the chemist  
Various heat rubs recommended by friends and the pharmacist  
None of these remedies helps much

#### **Other medical problems**

You have had diabetes for the past 5 years, controlled by tablets

#### **Prescribed medicines**

You will have a list of these

#### **General ideas, concerns, expectations**

You are concerned that the problem is due to rheumatoid arthritis – a close friend had this some years ago and became very disabled.  
You think that osteoarthritis is due to stress in joints in people who are very overweight  
You would like more powerful painkillers to keep you going and improve sleep

#### **Ideas, concerns, attitudes about weight and diet**

You have tried many times to lose weight and the diabetes nurse always mentions it  
Dieting has never seemed to work in the past  
Trying to lose weight probably isn't worth the effort  
You aren't that much overweight so it probably isn't that important to the state of your joints



You really don't think you could stick to a strict diet  
If you were to try again to lose weight, you would need help with this  
Slimming clubs are expensive  
Money can be a problem at times and healthy food is expensive

### **Guidebook (for nurse consultations only)**

You have had a look at the guidebook your GP gave you and have skimmed through some bits of the text.

### **General guidance**

- It is the job of the GP or nurse to question you sympathetically and gain an understanding of all these issues before working out an action plan with you and possibly giving you some advice:
- Don't offer lots of information without being asked
- But don't be deliberately obstructive or misleading in your answers
- React as you normally would to whatever way you are being treated by the GP or nurse
- Try to focus on how you are made to feel and what words, tone, expression or action was helpful or unhelpful to you – you may be asked this by the facilitator

### **Adding your biographical details**

Please take time to develop your scenario into a real patient by adding detail that you will find comfortable and easy to relate. Items to include are:

- Previous and/or present occupation
- Previous sports
- Hobbies
- Voluntary or other activities
- Spouse, children, grand-children as appropriate
- Type of house you live in
- Locality and local facilities
- Etc

## **Appendix 5.13 Scenario for simulated patients E and F**

### **Scenario E&F – Simulated Patient Narrative**

#### **Demographic**

Male or female, aged 65-70 (or less). Normal body weight

#### **Your main problem**

Knee pain for 5 years (E) or hip pain for 3 years (F)  
Some pain in other joints, especially back and hand, at base of thumb  
Pain is worse with walking, stairs and steps  
Sometimes pain in bed, interfering with sleep  
Stiffness of affected joint especially after sitting a while but no prolonged stiffness in the mornings  
Pain limits recreational and/or occupational activities (invent)  
Pain has worsened a lot recently for no obvious reason

#### **Remedies you have tried**

Occasional paracetamol, usually 1 tablet – possibly helped a bit  
Tried Ibuleve gel once

#### **Other medical problems**

Thyroid gland doesn't work so have to take a daily tablet for this

#### **Prescribed medicines**

You will have a list of these

#### **General ideas, concerns, expectations**

You think the problem is arthritis, which several friends and relatives have  
Arthritis is part of getting older and joints wearing out, like parts in a machine  
You have heard of "complementary therapies" and wonder what is available and if they work  
A friend's GP prescribes Glucosamine for her (or him) and it seems to work so you would like to try this if it is safe

#### **Ideas, concerns, attitudes about painkillers**

Using painkillers just masks the pain so you could be doing more damage without knowing  
All drugs are addictive so it isn't a good idea to take anything regularly  
You often seem to get side-effects from medicines so are wary of them

There always seems to be something on the news about the dangers of medicines

### **Guidebook (for nurse consultations only)**

You have had a look at the guidebook your GP gave you and have skimmed through some bits of the text.

### **General guidance**

- It is the job of the GP or nurse to question you sympathetically and gain an understanding of all these issues before working out an action plan with you and possibly giving you some advice:
- Don't offer lots of information without being asked
- But don't be deliberately obstructive or misleading in your answers
- React as you normally would to whatever way you are being treated by the GP or nurse
- Try to focus on how you are made to feel and what words, tone, expression or action was helpful or unhelpful to you – you may be asked this by the facilitator

### **Adding your biographical details**

Please take time to develop your scenario into a real patient by adding detail that you will find comfortable and easy to relate. Items to include are:

- Previous and/or present occupation
- Previous sports
- Hobbies
- Voluntary or other activities
- Spouse, children, grand-children as appropriate
- Type of house you live in
- Locality and local facilities
- Etc

## Appendix 6.1 Measurement instrument for video assessment version 1

### MOAC-1 rating instrument v1

	Consultation behaviour	Notes on rating - desired behaviour	Behaviour present - Y - N - N/A - comments
1	The GP elicits the patient's ideas or concerns about their joint problem	The GP directly asks the patient what they think the problem is or what they are concerned the problem might be If the patient's ideas or concerns are expressed as part of general history taking this task does not need to be undertaken (score N/A)	
2	The GP tells the patient that the problem is due to osteoarthritis	Uses the word "osteoarthritis" - if only uses arthritis / wear and tear then rate behaviour as not present	
3	The GP elicits the patient's prior knowledge of osteoarthritis	The GP directly asks the patients what they know about OA / what they understand OA to be	
4	The GP gives the patient a brief explanation about osteoarthritis	The explanation needs to include an explanation that it does not inevitably get worse and that there are treatment options available	
5	The GP elicits what the patient has previously, or is currently, doing to self-manage the problem	The GP directly asks about prior/current self-management - for example, "What are you doing to help the problem? What things have you tried in the past?"	
6	The GP tells the patient that exercise is beneficial for OA and, if appropriate for that patient, that weight loss is beneficial for OA in people who are overweight	If the patient is not overweight then only exercise need be promoted This behaviour may be demonstrated as part of giving the explanation (4)	
7	The GP elicits the patient's expectations for the consultation	For example: how were you particularly hoping I could help? Had you any thoughts about what to do? What would you like to happen?	
8	The GP addresses these expectations	The GP provides advice / prescription / management plan to address expectation If not expectation expressed score N/A	
9	The GP offers the patient the guidebook and an appointment with the nurse in the OA clinic	Directly gives, or organises the patient to have the guidebook AND (must be both) offers an appointment for the OA clinic	

## Appendix 6.2 Measurement instrument for video assessment version 2

GP behaviour	Time 1st noted	Notes on observed / heard behaviour
<b>ASKING</b>		
What the patient has tried / is doing to help the problem  (current / previous treatment)		
What the patient would like the GP to do / hopes will happen  (expectations)		
What the patient thinks / worries the problem is due to  (ideas / concerns about the problem)		
What the patient knows / understands about OA  (ideas / concerns about OA)		
<b>ADVISING</b>		
The problem is due to OA - GP needs to use the word osteoarthritis  (giving the diagnosis)		
That OA does not always / inevitably get worse  (explaining the diagnosis)		
That OA is treatable / there are things which can be done to help  (explaining the diagnosis)		
That exercises / exercise / increased physical activity is beneficial for OA  (promoting self-management)		
If weight is being discussed that losing weight is beneficial for OA  (promoting self-management)		PLEASE INDICATE IF NOT APPLICABLE
<b>MANAGING</b>		
Addresses patient's expectations   <i>RECORD EXPECTATION</i>		
Offers / gives the patient written information on OA		
Offers the patient an appointment with a practice nurse to help with OA		

## Appendix 6.3 Measurement instrument for video assessment version 3

RATER..... VIDEO CODE..... DATE RATED.....

Outcome achieved if: i) the GP asks, gives or advises or ii) the GP responds adequately to information volunteered by the patient

Outcomes are:		Time first noted	Notes
<b>Gathering information</b>			
A	The GP knows what the patient has tried or is trying for the problem		
B	The GP knows what specific expectation(s) the patient has of the GP about the problem		Note the expectation here
C	The GP knows what are the patient's ideas or worries or concerns about the problem		
D	The GP knows what the patient knows or understands about OA		
<b>Explaining and advising</b>			
E	The GP tells the patient the problem is due to OA, the word <b>osteoarthritis</b> needs to be used		
F	The GP tells the patient that OA does not always / inevitably get worse		
G	The GP tells the patient that OA is treatable: that there are things which can be done to help		
H	The GP tells the patient that exercise(s) or physical activity is helpful for patients with OA		May be achieved as part of G
I	The GP tells the patient that losing weight is helpful for patients with OA		May be achieved as part of G
<b>Managing the problem</b>			
J	The GP responds to the patient's specific expectations ( <b>as noted at B</b> )		
K	The GP advises about, or prescribes for, pain relief		
L	The GP offers, or gives, the patient written information on OA		
M	The GP offers, or gives, the patient an appointment with a practice nurse to help with OA		

## **Appendix 6.4 Final measurement instrument for video assessment (final rating sheet)**

RATER.....

VIDEO CODE.....

DATE RATED.....

Y or N	Outcomes are:	Time first noted	Expanded Returned to	Notes
	<b>Giving the diagnosis</b>			
1.1	The GP elicits the patient's ideas or worries or concerns about what they think is the matter with them, or the cause of their problem			GP elicited <input type="checkbox"/> Pt. volunteered <input type="checkbox"/>
1.2	The GP tells the patient the problem is due to OA, <b>the word osteoarthritis needs to be used</b>			
	<b>Explaining the diagnosis</b>			
2.1	The GP elicits what the patient knows or understands about OA, <b>the word osteoarthritis needs to be used</b>			GP elicited <input type="checkbox"/> Pt. volunteered <input type="checkbox"/>
2.2	The GP tells the patient that OA does not always / inevitably get worse, <b>the word osteoarthritis does NOT need to be used</b>			
2.3	The GP tells the patient that OA is treatable: that there are things which can be done to help, <b>the word osteoarthritis does NOT need to be used</b>			
	<b>Addressing expectations</b>			
3.1	The GP elicits the specific expectation(s) the patient has of the GP about the problem			GP elicited <input type="checkbox"/> Pt. volunteered <input type="checkbox"/> <i>Note the expectation here</i>
3.2	The GP responds to the patient's specific expectations ( <i>as noted at 3.1</i> )			
	<b>Providing analgesia</b>			
4.1	The GP elicits what the patient has tried or is trying for the problem			GP elicited <input type="checkbox"/> Pt. volunteered <input type="checkbox"/>
4.2	The GP advises about, or prescribes for, pain relief			<i>May be achieved as part of 3.2</i>
	<b>Promoting self-management</b>			
5.1	The GP elicits what the patient has tried or is trying for the problem, <b>other than for the pain</b>			GP elicited <input type="checkbox"/> Pt. volunteered <input type="checkbox"/>
5.2	The GP tells the patient that exercise(s) or physical activity is beneficial for patients with OA or for the patient's problem			<i>May be achieved as part of 2.3</i>
5.3	The GP tells the patient that losing weight, or not being overweight, is beneficial for patients with OA or for the patient's problem			<i>May be achieved as part of 2.3</i>
	<b>Promote self-management support</b>			
6.1	The GP offers, or gives, the patient <b>general written</b> information on OA			
6.2	The GP offers, or gives, the patient an appointment with a practice nurse to help with OA			



## Appendix 6.5 Instructions for video assessors

### MOSAICS GP VIDEO RATING STUDY - INSTRUCTIONS

1. Fill in your name, video code and date the rating was undertaken
2. Watch each video recording in the order listed on your sheet (O:\MOAC video rating)
3. When you see/hear one of the outcomes stop the video & note the time on the video when this was first seen/heard (you may need to rewind slightly to note the time)
4. If outcome “expanded on / returned to” tick in this column
5. Note very briefly, in the “notes” column, what you heard or saw for this outcome.
6. Points to note when rating
  - a) Opening GP questions such as “what can I do to help?”, or “how can I help today?” do not represent “eliciting expectations” – item 3.1
  - b) Items 1.1, 2.1, 3.1, 4.1 and 5.1 are preludes to the provision of information and need to be scored in reference to this – enough information needs to have been elicited for the provision of information to be tailored to the patient
    - 1.1 so that the diagnosis is given in light of what the patient thinks the problem is
    - 2.1 so that the OA explanation is tailored to the patient’s prior knowledge / understanding
    - 3.1 so that the patient’s **specific** expectation can be addressed
    - 4.1 and 5.1 so that advice on pain and self-management is tailored to what the patient has tried / is trying
  - c) Items above may be GP elicited or patient volunteered, or both, please note
  - d) For item 3.1 please note the patient’s expectation in the “notes” column
  - e) Items 5.2 and/or 5.3 may be achieved as part of 2.3 – score **all** if achieved
  - f) Item 4.2 may be achieved as part of 3.2 (if pain relief was the specific expectation) – score **both** if achieved
  - g) 6.1 is only achieved if **general written** information about OA is given, and not specific info on one aspect of care. This is the first appointment for the problem and the patient needs to be given some **general written** info on OA
  - h) Item 6.2 is only achieved if the nurse appointment is for the general management of OA, and not one specific issue such as weight loss
  - i) If you need to check the rating please feel free to review any part of the video – you do not need to look at the video just once
7. When you are satisfied with your rating fill in in the first column for your overall assessment: outcome achieved yes or no
8. Then put the completed form in the envelop provided and do not re-rate it in light of watching subsequent videos
9. When you have completed all the videos allocated to you please seal the envelop and return it to Mark

## **Appendix 6.6 Descriptive results of inter-assessor ratings and comparison of assessors' ratings with standard ratings**

Item	VIDEO A						% agree	VIDEO B						% agree	VIDEO C						% agree	VIDEO D						% agree	VIDEO E						% agree
	GS	CB	SS	RH	JE			GS	CB	SS	RH	JE			GS	CB	SS	RH	JE			GS	CB	SS	RH	JE			GS	CB	SS	RH	JE		
1.1	Y	Y	Y	Y	N		75	Y	Y	Y	Y	N		75	N	Y	Y	Y	N		75	N	Y	Y	Y	N		75	Y	Y	Y	Y	Y		100
1.2	N	N	N	N	N		100	Y	Y	Y	Y	Y		100	N	N	N	N	N		100	N	N	N	N	N		100	Y	Y	Y	Y	N		75
2.1	N	N	N	N	N		100	Y	Y	N	Y	N		50	N	N	N	N	N		100	N	N	N	N	N		100	N	N	Y	Y	N		50
2.2	N	Y	Y	N	Y		75	Y	Y	Y	Y	Y		100	Y	Y	Y	Y	Y		100	N	Y	N	Y	N		50	Y	Y	Y	Y	Y		100
2.3	Y	Y	N	N	Y		50	Y	Y	N	Y	Y		75	N	Y	N	Y	Y		75	Y	Y	N	Y	N		50	Y	Y	Y	Y	Y		100
3.1	Y	Y	Y	Y	N		75	N	Y	N	Y	N		50	Y	Y	Y	Y	Y		100	Y	Y	Y	Y	Y		100	Y	Y	Y	Y	Y		100
3.2	Y	Y	N	Y	N		50	N	Y	N	Y	N		50	Y	Y	Y	Y	Y		100	Y	Y	Y	Y	Y		100	Y	Y	Y	Y	Y		100
4.1	Y	Y	Y	Y	Y		100	Y	Y	Y	Y	Y		100	Y	Y	Y	Y	Y		100	Y	Y	Y	Y	Y		100	Y	Y	Y	Y	Y		100
4.2	Y	Y	Y	Y	Y		100	Y	Y	Y	Y	Y		100	Y	Y	Y	Y	Y		100	Y	Y	Y	Y	Y		100	Y	Y	Y	Y	Y		100
5.1	N	N	N	Y	N		75	N	N	N	Y	N		75	N	N	N	N	N		100	N	N	N	Y	N		75	N	N	N	Y	N		75
5.2	Y	Y	Y	Y	Y		100	Y	Y	Y	Y	Y		100	Y	N	Y	Y	Y		75	Y	Y	Y	Y	Y		100	Y	Y	Y	Y	Y		100
5.3	N	Y	Y	Y	Y		100	Y	Y	Y	Y	Y		100	N	N	N	N	N		100	N	N	N	N	N		100	Y	Y	Y	Y	Y		100
6.1	Y	Y	Y	Y	Y		100	Y	Y	Y	Y	Y		100	Y	Y	Y	Y	Y		100	N	N	N	N	N		100	Y	Y	Y	Y	Y		100
6.2	Y	Y	Y	Y	Y		100	Y	Y	Y	Y	Y		100	Y	Y	Y	Y	Y		100	N	Y	Y	Y	Y		100	Y	Y	Y	Y	Y		100

% agreement in green if 75 / 100% of raters agree with gold standard, and in red if disagree

Inter-rater reliability - % of rated items with: 100% agreement 48/70 = 69%, 75% agreement = 14/70 = 20%, 50% agreement = 8/70 = 11%

Agreement of ratings with good inter-rater reliability with the gold standard - Inter-rater reliability of 75 or 100% and majority rating agrees with gold standard = 56/70 = 80%

Disagreement of ratings with good inter-rater reliability with the gold standard - Inter-rater reliability of 75 or 100% and majority rating disagrees with gold standard = 6/70 = 9% - note five items with disagreements (one item with two disagreements), three videos with disagreements (two each)

## **Appendix 7.1 MOSAICS GP Training Report**

## **MOSAICS GP Training Report**

GPs in the four intervention practices were trained to deliver their component of the MOSAICS intervention between December 2011 and May 2012. This report details; i) the logistics of delivering the training, ii) the content of the training sessions and methods employed to deliver them, iii) reflections on the delivery and success of the training based on contemporaneous notes made by members of the study team and feedback from the GPs attending the sessions, iv) the development of the SP component of the training and consultation videoing and v) the logistics of organising simulated patient (SP) consultation videos.

### **Sections**

1. Site visit
2. Briefing meeting
3. Baseline simulated patient consultation video
4. Training session 1
5. Training session 2
6. Second simulated patient consultation video
7. Training session 3
8. Debriefing meeting
9. Third and fourth simulated patient consultation video
10. GP attendance at the briefing/debriefing meetings and training sessions
11. GP evaluation of the MOAC-1 training
12. Reflections on the MOAC-1 training
13. Suggestions for future OA consultation training for GPs
14. Development of the simulated patient scenario, biography and training

Sections 1-9 are in the order a practice would have undertaken them.

### **1 - Site visit**

#### **1.1 OVERVIEW**

All eight MOSAICS practices were visited by the study co-ordinator (AG) and another member of the study team during November 2011 to arrange, or confirm if previously arranged, the training dates for the GPs and practice nurses, and dates for the SP video consultations. These were negotiated on the understanding that they would only be needed if the practice was randomised to the intervention arm. The study team was very flexible in agreeing when the GP training might take place: to allow GPs to choose times and dates which were most convenient for them. Some practices preferred evening only training while others preferred afternoons. Discussions also took place on which practice nurses might be able to deliver the nurse component of the MOSAICS intervention and thus needed to attend the nurse training sessions. The study team was unable to offer any flexibility for the practice nurse training as dates had already been fixed to ensure that all those delivering the training would be available

on the day. A schedule of training dates and dates for the SP consultation videos was drawn up for each practice and sent to the practice after the meeting.

The study team in general, and the practices at the time of the site visits, did not know which arm the practice was to be randomised. Randomisation had been undertaken prior to the site visits by one of the study statisticians (ML) blinded to the identity of practices. This was revealed before the site visits to the three members of the study team - those who were responsible for organising the logistics of training the intervention practices (MP (study team lead for GP training), AG and KV (study research nurse)). The early reveal to selected members of the study team was to ensure that, when allocation of the practices was revealed, all arrangements for training had been fully agreed by the practice and were firmly in place for the commencement of the training and the SP consultation video recording. Randomisation was not revealed to any other members of the study team until each practice was informed as to which arm of the trial they had been randomised to. Other members of the study team did not know that this early reveal had taken place.

The reason for taking this approach was that it was envisaged that it would be difficult to implement the training, and SP consultation videos in a timely fashion, when allocation (intervention/control) was revealed to the practice, unless the practice had firmly agreed to the schedule. The difficulty for the practice in firmly agreeing these dates was that it; i) was being asked to agree nine separate training dates and four separate dates for SP consultation videos, ii) had to agree dates which were up to four months in the future and iii) knew there was a 50/50 chance that they would not be an intervention practice. At the briefing meetings, during which allocation was revealed, it was confirmed that practices had been unaware of which arm they had been allocated to in advance of the six month randomisation date prescribed by the study protocol.

## 1.2 PRACTICALITIES OF INDIVIDUAL SITE VISITS

The site visits to the practices were undertaken by AG and/or MP and/or KV and a schedule of training, and SP video, dates was agreed with each of these practices. The site visits were arranged by one of two members of the study team (SH AG) and no difficulties were encountered setting up these meetings. This was principally because: i) only the practice manager and one GP were asked to attend the meeting, although at some visits other members of the practice team attended (appendix 1), and ii) payment was made to the practice for those attending.

## 2 - Briefing meeting

### 2.1 OVERVIEW

#### 2.1.1 First wave

Randomisation of the first wave of four practices was revealed to the whole study team in the first week in December and briefing meetings were undertaken during that week (5<sup>th</sup> to 9<sup>th</sup> December) at the practices.

DS and BH practices were randomised to the control arm and received the control practice briefing. This consisted of; i) a brief recap of the study, ii) revealing that the practice was in the control arm, iii) giving the practice a pack of written information on OA for professionals and patients (appendix 50) and iv) feedback on the use of the template in the first four months of the "run-in" period (appendix 2)

AL and AJ practices were randomised to the intervention arm and received the intervention practice briefing. This consisted of; i) a brief recap of the study, ii) revealing that the practice was in the intervention arm, iii) a brief introduction to the new approach to the management of OA to be delivered in the practice, iv) details about the training and simulated patient consultation videos, v) information on formal research agreements, remuneration and practice indemnity, vi) giving the practice a pack of written information on OA for professionals and patients (appendix 50) and vii) feedback on the use of the template in the first four months of the "run-in" period (appendix 3).

### 2.1.2 Second wave

Randomisation of the second wave of four practices was revealed to the whole study team in the second week in January and briefing meetings were undertaken over the subsequent three weeks at the practices.

ED and EW practices were randomised to the control arm and received the control practice briefing (appendix 2). IB and R practices were randomised to the intervention arm and received the intervention practice briefing (appendix 3).

### 2.1.3 Logistics

The dates for the briefing meetings were arranged during the site visits and there were no difficulties in arranging these meetings, which were normally held at lunchtime at the practices.

## 2.2 PRACTICALITIES OF INDIVIDUAL BRIEFING MEETINGS

### 2.2.1 Practice AL

The briefing meeting for the practice AL was undertaken on Tuesday 6<sup>th</sup> December 2011 with MP, KD (Chief Investigator), AG and KV present from the study team and AM (social science researcher) observing for the Normalisation Process Theory (NPT) study team. Three GP partners and one GP in training attended from the practice. The meeting lasted an hour and a number of issues were raised:

1. One of the GP partners was unaware of the training dates negotiated with the practice at the site visit and pointed out that several were on days when she did not work at the practice. She was noncommittal on being able to attend all the training.
2. One of the GPs felt the template fired "too often" and that this required the GP to have to escape the template frequently which he felt was teaching the GP not to use the

template. KD agreed to feed this back to the team who had developed the template and that the study team would report back to the practice on this.

3. There was lack of clarity from the GPs as to which nurse(s) would be able to deliver the OA Clinics and attend the training
4. NPT notes taken at the meeting recorded the practice response to being informed it was in the intervention - "The reaction by the practice members present was not outwardly enthusiastic, but not negative either". The notes also record the discussion between two GPs – one who was the MOSAICS lead and the other the senior partner – which revealed that the senior partner had not been kept in the loop when decision had been made and was wanting to revisit the decisions at the meeting

### 2.2.2 Practice AJ

The briefing meeting for practice AJ took place on Friday 9<sup>th</sup> December 2011 with MP, KD, AG and KV attending from the study team and PO (Professor Social Sciences) observing for the NPT study team. The two GPs, the practice nurse and the practice manager attended from the practice. The meeting lasted an hour and the following issues were raised:

1. The NPT notes recorded:
  - a. At the reveal that they were an intervention practice one of the GPs said "good" and asked who the other practice was. He felt that being together with practice AL represented a "good mix" and he knew the senior GPs there, and seemed positive about working with them. He turned to the practice nurse and asked her "are you ok about this?" and she answered affirmatively. He turned to us and said "she's keen" and continued to explain that they have appointed another nurse to support this nurse
  - b. MP explained that MOAC has to be understood as enhanced clinical care within the practice and one of the GPs said he welcomed that, and that he understood that it is provided under the practice's control
  - c. MP passed the information pack to one of the GPs ("my weekend work") who was pleased because "we want to give patients information, and in the past I'd received things from MP. Good ones. But lately we have not had anything, so this is helpful"
  - d. One of the GPs said the MOSAICS template should be seen differently (from QOF templates) as a helpful tool to record what care was given to a patient population that had not received much attention because the condition is not in QOF
  - e. General feeling: very pleased that they are an implementation practice. One of the GPs said at the end "thank you and I am pleased"

### 2.2.3 Practice R

Briefing meetings were held at practice R on Monday 16<sup>th</sup> January and Wednesday 18<sup>th</sup> January with MP (not for second meeting - unwell) AG, KD and KV present, with AM observing the first and PO the second meeting. Over the two meetings 24 practice staff attended: ten GP partners, four GPs in training, seven practice nurses, one HCSW, the practice manager



and a practice administrator. Both meetings lasted an hour and the following issues were raised:

1. The NPT notes recorded:
  - a. MP reveals that the practice has been randomised to the intervention arm of the study. The overall reaction was muted, with no overt signs of dismay or pleasure. The PM commented "what a surprise" in a mildly rueful manner. GP5 said "well, it was randomised wasn't it" – implying that this was always a possibility
  - b. When MP pulled up the slide and discussed the training involved the PM responded by saying that the dates are in the diary, but intimated that getting people to attend may be difficult. Again the issue of logistics and the needs of the practice, holidays etc were raised. Mark reassured her by saying that we can work with the practice on this. When Simulated Patients and videoing were mentioned GP2 & GP4 pulled faces and exchanged a glance
  - c. MP reiterates the need to communicate the study amongst the practice team and asks if those in attendance would talk to those who were not in attendance. At this point the PM returns to the issue of training dates and questions how to operationalise them. She leads on this, but she also has some support and questions offered by the GP 1 & 3. Apparently the training dates fall on 'protected learning time' for staff within the practice, but the PM still feels it may be logistically difficult. Mainly because of holidays and the practice rota. At this point GP5 suggests that training, where possible can be cascaded to within the practice by people who have attended the sessions. *(note – I think this reflects the fact that the GPs had decided that they wanted to undertake this study, and be research active in general, and so were trouble shooting the problems the PM was putting up, who was probably not as keen)* One of the suggested training sessions is to be held during the evening (mark states this is to cover the working hours of GPs). Two of the GPs (2 & 4) again pull faces and exchange looks – they seem unconvinced or unhappy with this

#### 2.2.4 Practice IB

The briefing meeting was undertaken on Friday 3<sup>rd</sup> February at practice IB with KD and AG present (MP not able to make the meeting) and AM observing. From the practice the two GPs and the two practice nurses were present. The meeting lasted an hour and the following issues were discussed:

1. One of the practice nurses attending the meeting had not previously been told about the practice's desire to participate in the study and the possibility that she would be asked to attend the MOAC-2 training. There was then a discussion between herself and the GPs about the difficulty in attending because of childcare. The GPs were keen for her to attend but she not. The GPs asked if it was possible if the training could be delivered between 10am and 2pm to accommodate her childcare arrangements, or taught via booklets. This resulted in a somewhat difficult exchange between the nurse

and the GPs in front of the study team. This was the first example of poor communication between the GPs and the nurses at practice IB.

2. It was decided that the other nurse would be able to attend the training and deliver the clinic
3. One of the GPs showed the study team a number of brief leaflets on musculoskeletal problems, including one on knee pain, produced jointly by Arthritis Research UK and Wolverhampton PCT and being used in the practice
4. NPT notes concluded: despite an initially muted response, the GPs seem very happy to be in the study and appear committed and helpful. The meeting was interesting as it offered a sense of who is the main decision maker and how he operates. It also suggested something about the communication lines within the practice. The nurses in general were very quiet apart from expressing their displeasure at the training. There is a potential problem with getting the practice nurses to the training dates agreed, so is an issue for the team to discuss and work on

### **3 - Baseline simulated patient consultation video**

KV organised and undertook the videoing sessions in each practice. The following numbers of GPs were video'd in each practice:

- Practice AJ 2
- Practice AL 5
- Practice R (two sessions) 15
- Practice IB 2

The GPs were asked to manage the presenting problem as they would normally (appendix 4) and were supplied with a "patient summary for the SP (appendix 5) and a paper copy of the template (appendix 6). If the GP asked to examine the SP they were handed an examination card by the SP (appendix 7).

All the SP consultation video sessions were run at the practices by KV, who noted that:

1. Getting all the GP's to consent for the first video session worked well
2. Getting GP's involved and engaged for SP consultation video went better than anticipated
3. Allowing a half hour gap after 3 consecutive GP' videos worked well: no one got held up and it was good for the flow of their surgeries
4. Having several surgeries to visit in one day was a challenge but not a problem. For larger practices offering two dates a week apart may have "captured" more GPs
5. There were difficulties in getting dates in the individual GPs' diaries for the sessions at the surgeries. Where there were more than two GPs it was good to have a helpful practice manager: to organise the video slots and book the GPs into them
6. Sharing the video equipment with other studies was not a problem, but required KV to be well organised. It worked well as everyone was very accommodating

### **4 - Training session 1**

## 4.1 OVERVIEW

This training session was two hours long with the first hour for all the practice team and the second for the GPs and practice nurses only. It was intended to achieve the following objectives:

1. In the first hour
  - a. Facilitate the practice to identify how OA was currently being managed in the practice (see appendix 8 for checklist for this session) and record this on a flip chart
  - b. Provide knowledge on OA; i) how to define it, ii) its underlying pathophysiological processes, iii) its prevalence, iv) current management, v) the impact on the person, vi) beliefs about it, vii) its prognosis, viii) support for self-management, ix) the recommendations of the 2008 NICE OA Guideline
  - c. Provide practice staff with a copy of the NICE OA Quick Reference Guide (appendix 9) and a copy of the Keele OA Guidebook (appendix 10)
  - d. Provide an overview of the new approach to the management of OA to be delivered in the practice
2. In the second hour
  - a. Discuss case histories brought to the session by the GPs to identify what difficulties the GPs experience in currently managing OA, both knowledge and skills gaps, and list these for addressing in training sessions 2 and 3. Record this on a flip chart
  - b. Inform the GPs and nurse about the nurse training and the details of the GP component of the MOSAICS intervention - the content and style of the initial consultation between a GP and an older adult presenting with peripheral joint pain
  - c. Provide the GPs and nurses with a copy of the Arthritis Research UK OA Hands On leaflet (appendix 11) and version one of the MOAC-1 aide-memoire (appendix 12)
  - d. Inform the GPs about the content of training sessions 2 and 3
  - e. Provide the GPs with a DVD of their baseline SP consultation
  - f. Ask the GPs to watch the DVD and compare their consultation with that detailed in the aide-memoire
  - g. Ask the GPs to read the Keele OA Guidebook

The sessions were delivered by MP and the GPs and practice nurses were given a copy of the PowerPoint presentation used (appendix 13).

### 4.1.1 Logistics

The dates for training session 1 were organised at the site visits with all the other MOAC-1 training days. Negotiations with intervention practices were more intense to ensure that these dates were definitely "put in the diary". Setting up training dates for practice R was more difficult than for other practices due to the size of the practice, and the number of staff that needed to attend. The study team was able to arrange a single meeting (other training

sessions had to be delivered twice) for training session 1 by agreeing to deliver the training during a practice protected learning time afternoon. There was a lot of kit (GP training packs, flip chart stands, projectors and laptops, as well as a projector screen in one case) to transport for training session 1, which necessitated several people to transport and carry all of the equipment.

## 4.2 DETAILS OF INDIVIDUAL TRAINING SESSIONS

### 4.2.1 Practice AJ

Training session 1 was undertaken at practice AJ on Tuesday 10<sup>th</sup> January with MP, AG and CM (Professor Pain Psychology) from the study team and AM observing. The two GPs, the practice nurse, the practice manager and four receptionists attended from the practice. The flipchart notes from the "OA mapping" session and the "case history" session are shown in appendix 14. The following points were noted by CM while observing the session:

- There was good input from the GPs during the OA knowledge update (section 4.1, 1b above), especially over clinical diagnostics
- The GPs pointed out that the OA clinic service would not be available to housebound patients - agreed by study team
- GPs commented that since involvement in MOSAICS their attitude to OA had changed and that they had a clearer focus on the NICE OA recommendations and that they believed that they had something to offer to relieve pain and improve mobility
- GPs felt physiotherapy referral may be needed in order help patients overcome practical problems in increasing exercise
- GPs felt that completing the consultation in 10 minutes is a challenge, especially as consultations often need to address other problems: for example the patient's agenda, specific medication management. And this is particularly true for the elderly
- GPs commented that the most difficult decisions surround; allowing for co-morbidity, co-existing mental health problems and their influence on improved pain management, multiple joint OA and when to refer to secondary care
- GPs happy with NICE OA recommendations
- GPs expressed a wish to have individual feedback on their own SP consultation videos

#### Additional comments:

- None of the GPs brought a case history but were able to recall problems and issues with managing OA
- The practice nurse was very engaged with the meeting and there was positive engagement by all those attending
- NPT notes record:
  - Receptionist 1 asked if they would be given a supply of the guidebook to hand out to patients. MP replied no, because we are interested in finding out if the new intervention as a whole works, but said it may be useful for the future. Nurse suggested that ARUK leaflets could be handed out too. Practice Manager (who had not said a word up until this point) asks for a set of the leaflets that from other organisations that we recommend – to be given out in the practice

- General observations and thoughts
  - GPs engaged and distinguish between normal care
  - Practice Nurse is engaged, understands the rationale for the study, and that it is a different approach in terms of organisation and the focus upon joint pain. At the same time she also appears to feel comfortable with her role in the intervention because some of the practical things appear familiar to her – i.e. weight loss and exercise advice. Coherence and 'buy in' – can they be helped by familiarity?
  - Practice staff now aware of the study and seemed genuinely interested in it and appeared to understand the concept.
  - First time study properly communicated within the wider practice team – more work needed on this front? It certainly seemed to be appreciated by all who attended – part of ground work for communication and reflexive monitoring? GP1 was especially pleased that this had happened.
  - Wider practice team a source of knowledge about local resources that can aide mosaics. Also seem to have good relationships with and knowledge of the patients. Arguably useful to foster this and ensure such information is communicated to help facilitate MOSAICS? i.e. the NPT toolkit and trust being held between individuals and groups about their roles in an intervention

#### 4.2.2 Practice AL

Training session 1 was undertaken at practice AL on Wednesday 11<sup>th</sup> January with MP, CM, KD and AG from the study team, and AF (MOSAICS research nurse and PhD student) and PO observing. Five GPs, one of the practice nurses, a HCSW, the practice manager and ten receptionists attended from the practice. The flipchart notes from the "OA mapping" session and the "case history" session are shown in appendix 15. The following points were noted by CM while observing the session:

- Less detailed discussion from the GPs during the OA knowledge update than was observed at practice AJ
- None of the GPs used capsaicin gel

#### Additional comments

- None of the GPs brought a case history but were able to recall problems and issues with managing OA
- Physiotherapy was delivered in the same building as practice AL but there was little used by the practice, and communication with the service was poor
- The Health Care Support Workers (HCSW) at meeting was very well informed about local community services and links
- The GPs raised the issue of using their HCSWs to deliver the intervention as they felt they could deliver the OA clinics given that they are undertaking similar behaviour change consultations regarding smoking cessation and weight loss at present. Study team discussed this with them and agreed to take the suggestion away and come back

to the practice with further thoughts on this issue. (note - this was extensively discussed by the study team with particular input from PO and it was decided to offer the nurse training to HCSWs from their practice and at the end of the training take on view on whether any HCSWs completing the training felt competent themselves, and were felt competent by the nurse trainers, to deliver the OA Clinic. *(Note - one HCSW, Sue, attended three days of the training but was unwell on the fourth day and did not complete the training. It was consequently felt by Sue and the study team that she should not deliver the OA clinics.)*)

- Only one of the practice nurses (out of three at the practice) attended training session 1 and it had not previously been decided by the practice which of the practice nurses was to attend the nurse training. It would have been good if this had been decided as the study team could then have tried to make sure all the relevant practice nurses attended training session 1. *(Note - in fact a decision as to which practice nurse would attend the nurse training and the deliver the OA clinic was not made until shortly before the first nurse training day. This was in part due to the practice considering HCSWs, rather than practice nurses, would be the most appropriate people to deliver the OA clinic, and the practice nurses not wanting to work extra sessions to deliver the OA clinics and the practice being reluctant to release them from their practice sessions. The latter point was in part due to the fact that two of the practice nurses were nurse practitioners and had a very skilled role in the practice, which the practice could not reduce or cover.)*
- NPT notes recorded:
  - One GP suggested that clinical presentation was most important, while another GP thought degeneration and X-rays are indicative. A discussion about symptoms versus X-rays followed. MP then continued with his presentation and received little visible reaction. When he got to topical NSAIDs one GP said that they had been reluctant to prescribe this because the PCT medicines management team did 'not allow it. Thus, they have used it less, except for hips

#### 4.2.3 Practice R

Training session 1 was undertaken at practice R on Wednesday 1<sup>st</sup> February with MP, CM, KD and AG from the study team and AM observing. Ten GPs, three GPs in training, four practice nurses and two HCSWs attended from the practice. The flipchart notes from the "OA mapping" session and the "case history" session are shown in appendix 16. Additionally it was noted that the GPs would like certificates of attendance and individual feedback on their SP consultation videos. The following points were noted by CM while observing the session:

- Some of the GPs present stated that they dissuade patients from having an x-ray to diagnose OA
- The practice has a high number of home and care home visits - in response to the information that the OA Clinic was practice-based

Additional comments

- None of the GPs brought a case history but were able to recall problems and issues with managing OA
- Four of the five practice nurses who attended the MOAC-2 training attended training session 1. (*Note - the decision as to which nurses would attend the nurse training and deliver the OA clinic was, as with practice AL, not made until shortly before the first MOAC-2 training day*)
- NPT notes concluded:
  - Overall the practice seem quite happy with the training and engaged with it well. Notably the practice did not include the admin staff in the training. The reasons for this are unclear? Were the admin staff doing other training? Do the practice not see them as part of the 'team' necessary to run MOSAICS? The GPs mainly dominated any discussions so it was difficult to get a sense of what the nurse and HCAs make of it. What struck me as interesting is how a lot of what MOSAICS is about (behaviour change, lifestyle modifications etc) seems to resonate with what a lot of the Practice already does. Seemingly the GPs are keen on MOSIACs from this perspective and it seems to make sense to the Nurses / HCAs. So in some respects the intervention is 'the same but different'. It seems that there are some similarities between what GPs already do in practice and what MOSAICS wants them to do (i.e. not use x-rays etc) and what would suit the GPs. So the study makes sense from this perspective. Hard to understand how the practice are communicating about the study internally. Little insights into what the Nurses / HCA make of the study. It is very clear that one GP is the key person for organising and leading the project operationally – not sure if they are the opinion maker though? Two others have a definite interest in it. Others seem happy to be involved, but less distinct is decision making process and who is the main opinion former and powerbroker.

#### 4.2.4 Practice IB

Training session 1 was undertaken at practice IB on Wednesday 22<sup>nd</sup> February with MP, CM and AG from the study team and AM observing. The two GPs, the practice manager and a receptionist, but no practice nurses, attended from the practice. The flipchart notes from the "OA mapping" session and the "case history" session are shown in appendix 17. Additionally one of the GPs asked if the OA Guidebook had been checked for reading age (it had not but had been piloted for readability on members of the Keele Research User Group). The following points were noted by CM while observing the session:

- The GPs commented that there was a possible therapeutic value of an x-ray, when explaining the diagnosis
- The GPs felt the diagram of the joint was useful for explaining OA
- The GPs commented on the potential problem of reducing non-steroidal anti-inflammatory use, that of increasing the use of opioids
- GPs agreed to adopt a clinical approach to the diagnosis of OA
- GPs commented that they had found the template helpful in prompting for care
- There was a discussion on general health literacy in the Bilston area

Additional comments

- None of the GPs brought a case history but were able to recall problems and issues with managing OA
- The practice nurse who was to undertake the MOAC-2 training and deliver the OA clinic did not attend, as she does not work on the day of the week which the training session was delivered on. The study team were unaware of her working week and if they had been could have sought to make arrangements to alter the date or negotiate the nurse working in her day off. There was an assumption by the study team that the practice would understand that it was important for the nurse to attend and make the necessary arrangements for her to do so. This illustrates a number of issues in organising the training:
  - The study team had a “softly softly”, rather than didactic, approach to telling practices what they needed to do. And in retrospect it might have been better to have been more didactic
  - The study team assumed that there was good communication within practices, but this was not always the case
  - The study team assumed that practices gave the requirements of the MOSAICS study a high priority, but this did not seem to be true at times and service delivery and family life often took priority
- NPT notes record:
  - Overall: it appears the GPs are very enthusiastic about the project and a lot of the intervention seemingly makes sense to them. The justification for the study and a lot of the features (such as not using x-rays or encouraging lifestyle changes) appears to resonate with them. The GPs already question the need for x-rays and like a lot of other practices the idea of changing behaviour relating to problems with weight and lack of exercise is something that is already in their consciousness. The template appears to be a focal point for the GPs – they seem to really like it and seem to suggest it has already changed their behaviour. It seems acceptable and sensible to them. The lack of nurse attendance is interesting. One nurse has Wednesdays off so that was the reason she did not attend. The other Nurse’ non attendance is seemingly down to lack of engagement with the study, which in tandem with one of the GPs later comments suggest she will not be delivering the intervention. The nurses are the main obstacle at this practice, as one appears to be not engaging and the other who is interested has other priorities (family life) that may prevent her full engagement with the training.

## **5 - Training Session 2**

### **5.1 OVERVIEW**

Training Session 2 was the first of two sessions which focussed on consultation skills training for MOAC-1. It was envisaged that the two practices in each wave of the study would undertake the training together. This was true for the wave 1 practices (AL and AJ) but for logistical reasons this was not possible for the wave 2 practices (R and IB are some 60 miles



distant). The training session was not observed by a member of the NPT study team. The training session was two hours long and had the following objectives:

1. In the first hour
  - a. To allow reflection on training session 1
  - b. To facilitate reflection on the baseline SP consultation video in order to identify which MOAC-1 consultation skills should be addressed in the session
  - c. To introduce the GPs to working with SPs in the session on consultation skills.
    - That it was a group exercise with all participating GPs working as a group to develop and practise consultation skills
    - That VC (communication skills facilitator) would lead the session
    - That the task of developing and practising the MOAC-1 consultation would be broken down into "bite-sized" chunks
    - That the GPs would take it in turns trying out aspects of the consultation
    - That the SP consultation can be "paused" and/or "rewound"
    - That the SP can be asked to give feedback, but only in role
    - That the issues identified in the first part of the session would form the "agenda" for the SP session
2. In the second hour
  - a. To undertake the skills training to allow the GPs to develop and practise various aspects of the MOAC-1 consultation which were "on the agenda"
  - b. Provide feedback to the GPs trying out the consultation and facilitate discussion in the group
  - c. Refine the aide-memoire for the consultation to include the learnings from the session
  - d. Agree on revised aide-memoire
  - e. Provide information about the second SP consultation video session: for the GPs to practise what had been agreed in the revised aide-memoire
  - f. Plan for training session 3 by identifying more difficult topics to address in the consultation training
  - g. Allow reflection and feedback on the session

#### 5.1.1 Logistics

In general there were no problems in organising this session with the practices. However, there were logistical problems in getting all (or as many as possible) of the staff at practice R to attend this session. Very intense negotiations with the practice at the site visit resulted in agreement to undertake training session 2 twice in one day: one in the afternoon for staff who were working that evening (the practice's extended hours evening), and one in the evening for those who had worked in the afternoon. This worked well and resulted in 14 GPs and registrars attending training session 2 at practice R. Training session 2 for practices AJ and AL was a joint session for both practices and the study team needed to get both practices to agree to the same date and time and to get the GPs in practice AJ to attend the training at practice AL, where there was a room available. This was undertaken by agreeing a time and date with practice AL first but informing them that we would need to check the dates with the

practice they would be training with. The GPs at practice AJ were happy to attend the training at practice AL on the dates agreed. In part this was due to arranging the training session on a Thursday afternoon, a time when practices are often closed.

## 5.2 DETAILS OF INDIVIDUAL TRAINING SESSIONS

### 5.2.1 Practices AL and AJ GPs

Training session 2 was undertaken by GPs from practices AL and AJ on Thursday 19<sup>th</sup> January at practice AL with MP, KD and VC from the study team. The SP role was role D (Mary Roberts) played by Sheila Moss. The two GPs from practice AJ and the four GP partners from practice AL attended the training. Detailed notes on the delivery of the session were made immediately after the session by MP and KD. The key points are summarised below:

#### First hour

- Only one GP had viewed the DVD of their SP consultation but GPs were able to reflect on the consultation from memory
- MP went through the elements of MOAC-1 and asked them to reflect on these
  - Making the diagnosis
    - Some of the GPs were happy to make the diagnosis clinically, but some felt an x-ray would be needed
  - Giving and explaining the diagnosis
    - Most of the GPs would use “wear and tear”
    - MP explained the word “osteoarthritis” needed to be introduced as the guidebook was entitled a “Guide for people who have osteoarthritis”
    - MP suggested it was the explanation, rather than the label, that was most important
    - VC made the analogy to asthma diagnosis in children - as “the wheezy child” rather than asthma - and that this had altered with the increasing confidence of GPs in diagnosing asthma.
    - MP commented that people interpreted “wear and tear” in a variety of ways (MP distributed the “What does “wear and tear” mean to a patient” slide (appendix 19) to the GPs during their training session 3)
    - One GP did not like the term “wear and repair”, but did like “there are things that can be done to repair “wear and tear”
    - The idea was put that “wear and tear” could be used and added that repair and functional improvement are possible
    - Lorna’s patter (appendix 18) handed out and there was a reaction against this - felt to be too negative
  - Promoting the OA clinic
    - Get over the idea that “something can be done”
- Agreed agenda for SP session - to try out giving and explaining the diagnosis
- Agreed to address making the diagnosis of RA in training session 3
- GPs commented that they felt the OA Guidebook was too big (“must have been written by a professor”) and not likely to be read by many of their patients

## Second hour

- VC introduced how the session would run
- Agreed to start the consultation from the point where the diagnosis of OA had been made
- All bar one GP had a turn of consulting, with several volunteering to try things out
- The following approaches were tried out
  - From the history I think that the problem is most likely due to OA
  - Asking what the patient knows about OA
  - Flipping “wear and tear” to “wear and repair”
  - That other tissues other than the cartilage are involved and that strengthening muscles and ligaments can help
  - That the nurse can help with exercise and coping with the problem
  - Mentioning the OA Guidebook
  - That the problem is not in the “bones” but in the joint
  - That an x-ray was not needed - met with resistance in the SP (we had specified that the SP wanted an x-ray) - agreed that there would be times when an x-ray would be needed to make sure the patient, and/or GP, was comfortable with the diagnosis of OA. And that it was important to sort this out prior to the patient attending the OA clinic
- GPs valued using research evidence in the consultation
  - Poor correlation between x-ray findings, symptoms and prognosis
  - Benefit of exercise
- MP felt that the progress made during the session was that:
  - The GPs were more prepared to make and give the OA diagnosis
  - There were several good examples of eliciting beliefs or ideas, providing tailored information and eliciting understanding
  - There was GP engagement with patients’ needs, understanding and expectations
  - The GPs addressed the “repair” concept but in different ways
  - That the relationship of OA to muscle and ligament weakness was used as the basis of recommending the OA Clinic
- VC commented that the two-way interaction of senior researchers and clinicians with mainstream GPs could be an effective way of implementing guideline recommendations. And much better than a top-down NHS approach to guideline implementation - “do as I say”
- KD felt that the GPs occasionally misunderstood the concept of OA but felt that GPs voiced many good examples of high quality care for OA and that during the session the GPs worked out what best care for OA might look like. And that the latter was in agreement with NICE OA Guideline recommendations.

## 5.2.2 Practice R GPs

Training session 2 was undertaken by GPs from practice R on Monday 20<sup>th</sup> February at practice R with MP, CM and VC from the study team. The SP role was role D (Mary Roberts) played by Sheila Moss. The training was delivered in two sessions: 2-4.30 pm for the GPs with an

evening surgery that day and 5-7.30pm for the GPs who had had a surgery in the afternoon. Five GPs and two GPs in training attended the afternoon session and six GPs and one GP in training attended the evening session. Detailed notes on the delivery of the session were made during the session (by CM) and immediately after (by MP). The key points are summarised below:

#### First hour

- Afternoon session
  - MP recapped on MOAC-1 tasks from aide-memoire and asked about reflections from watching the DVD of SP consultation - only two GPs had watched the DVD
  - GPs had found it difficult to get through the consultation in 10 minutes
  - The presentation of hip pain had caused diagnostic difficulties
  - GPs comfortable with making a diagnosis of OA clinically, and not needing to x-ray
  - GPs not comfortable with the term "repair" - can helpfully normalise the symptoms but also can have negative connotations
  - MP went through the approach to be taken in the MOAC-2 clinic - GPs wanted to know what they were referring to and what training the nurses were having
  - Agenda for second hour agreed: giving and explaining the diagnosis, selling the guidebook and the clinic
  - Wear and tear slide handed out (appendix 19)
- Evening session
  - Format for the session altered
    - MP recapped on overall objectives of MOSAICS - support for self-management and implementing the NICE core treatments
    - VC led a brainstorming session on what the GPs would now, at this stage of the training, feel should be the flow of MOAC-1 and recorded this on a flip chart
    - Flip chart notes were:
      - Why there - affect on life
      - Expectations - of GP and patient
      - Make the diagnosis - exclusions - share diagnosis - reasons and explanations
      - What are they doing now
      - Understanding their problem
      - Examination
      - Worries / beliefs / barriers / hidden agenda
      - See nurse / give guidebook to read
    - VC handed out the aide-memoire
    - MP led reflection on SP consultation video
    - Wear and tear slide handed out (appendix 15)
    - VC introduced SP work
    - VC led the "practising the task session"
  - Only three GPs had viewed SP consultation video

- Some of the GPs did not feel the SP consultation felt very real - the BMI stated on the mock-up notes did not correspond to the SP's habitus

## Second hour

- Afternoon session
  - GPs good at asking about ideas about the problem and about OA
  - Wear, tear and repair puzzled the SP - MP floated the phrase "flare and repair"
  - Explicitly explaining it is not RA
  - Issue of joints and not bones which are affected and OA not the same as OP
  - Good examples of explanations leading to action: not wear and tear > whole joint involved > treatment aimed at this > strengthening muscles > exercise a good thing > hurt ≠ harm > evidence that exercise helps and does not harm
  - GP commented that as cant "show" OA this may be a reason why patients want an x-ray - to be able to see it
  - GP tried out how to offer the guidebook
  - Example of "working together"
  - Selling the OA clinic - "special clinic unique to Cheshire" - discussion on whether it is the nurse who is special
  - Noted that the OA Guidebook does not explain about the OA clinic
  - GPs had not read the OA Guidebook, as they had not looked at the DVD
- Evening session
  - GPs in the session do not worry about the need to x-ray and are very in tune with the NICE recommendations
  - BUT GPs do realise there can be problems in resisting the requests for x-rays and that may need to x-ray so that the patient is comfortable with the diagnosis
  - "repair" did not go down well - one GP commented that she did not like "sound-bites"
  - One GP tried out using "flare-ups" in the explanation - that symptoms come and go and treatment is about treating flare-ups and reducing their frequency/severity - but not stopping them altogether
  - GPs tried out - when giving the diagnosis confirm it is not RA
  - One GP tried out - recommending use of analgesia with exercise to reduce pain
  - One GP compared the OA clinic with a DM clinic when advising the SP about the OA clinic
  - Example explanation: lifelong use > wear and tear > also flare > can settle down > need to have stronger muscles (to help joints run true)
  - One GP commented, and others agreed, that the session provided a unique opportunity for the GPs to see and comment on the content and style of each other's consulting. That this was something she could not remember having done in the practice before and that this had benefits beyond the focus of the research study

## 5.2.3 Practices IB and AL GPs

Training session 2 was undertaken by the two GPs from practice IB and two GPs about to start at practice AL (one as an employed GP and one to cover one of the partner's maternity leave) on Thursday 1<sup>st</sup> March at Keele University with MP, CM and VC from the study team. The SP role was role F (Shirley Jones) played by Jean Clarke. Detailed notes on the delivery of the session were made during the session by CM and immediately after (by MP). The key points are summarised below:

#### First hour

- MP introduced the session with a recap on the key tasks for MOAC-1 (*Note - the two practice AL GPs had not attended any previous training and, as well as this recap, had a catch-up session with MP at the end of training session 2*)
- The practice IB GPs had been unable to view their DVDs for technical reasons and the practice AL GPs had not undertaken a SP consultation but had been sent a copy of one of the MP/SP consultations. The language to describe OA was discussed. One GP used the words "good old arthritis" when giving the diagnosis - this is his normal way of describing OA. It was not obvious if this was an attempt to normalise OA or if it had negative connotations (I don't want/need to treat you)
- Discussed the possibility of having a sheet to use when explaining OA (note, such a sheet was developed during the MOAC-2 training (appendix 40))

#### Second hour

- Started the SP consultation at the beginning of the consultation as practice AL GPs had not tried this out before
- All four GPs took turns in consulting
- Good exploration of patients problems / ideas
- Less good exploration of understanding of OA
- One GP tried out giving advice on prognosis - that it is uncertain but may not progress / not all need a joint replacement
- One GP introduced the benefits of pacing
- Discussion about "knowing your patient" and so deciding in which way to approach their problem
- One GP commented it is not like diabetes - cant just treat it with drugs

MP CM and VC felt that this session had not gone as well as at the practice R sessions as there was less "energy" in the discussion and trying out the consultation. However, it was anticipated that it would be more difficult to run the session with a small practice. We had unsuccessfully tried to get some of the practice R GPs to come to the session with the session. I think if we had only had the two practice IB GPs it would have been more difficult to run than was the case.

### 5.3 REFLECTION ON DELIVERY OF TRAINING SESSION 2 TO ALL THE PRACTICES

The engagement of the GPs was generally very good. All bar a very few GPs took an active part in the discussions and trying out the fragments of the consultation. The worry had been that established GPs would find it difficult to engage in consultation skills training but the

reverse was true. The comment from the GP at the end of the evening session at Danebridge is testament to this.

The sessions were very much directed by the GPs and areas they wished to raise or pursue were followed. This meant that there were occasions when a large amount of time was devoted to discussing or practising very specific issues: for example resisting a request for an x-ray and negotiating whether a referral for arthroplasty was needed. However, in all the sessions the key elements of the model OA consultation, after a diagnosis had been made, were addressed: how to give and explain the diagnosis, asking about ideas and expectations, how to promote self-management (specifically exercises and physical activity, weight loss, and use of simple analgesia), how to introduce the OA Guidebook into the consultation and how to offer and explain the OA clinic. This did not result in a specific script for doing this emerging and the idea of refining the aide-memoire during the sessions was not realised. This was undertaken by MP outside the consultation and resulted in an aide-memoire with the key features bullet pointed, the differential diagnosis table and the NICE OA treatment recommendations on one side and the key features of the OA clinic on the reverse (appendix 20). *(Note - this was introduced to the GPs at the debriefing meetings and produced in laminate form for all consultation rooms at each practice.*

## **6 - Second simulated patient consultation video**

KV organised and undertook the videoing sessions in each practice. The following numbers of GPs were video'd in each practice:

- Practice AJ 2
- Practice AL 3
- Practice R (two sessions) 14
- Practice IB 2

The GPs were asked to manage the presenting problem as you would normally but also incorporating the ways discussed in the group (appendix 21). There were, as in the baseline SP consultation, given a "patient summary" and paper copy of the template. GPs were given a DVD of the consultation during the video recording session at the practice.

The only logistical issue additional to those for the baseline SP consultation videos was that there was a tight schedule to get all the second SP consultation videos undertaken between training session 1 and training session 2.

## **7 - Training Session 3**

### **7.1 OVERVIEW**

Training Session 3 consisted of a one hour knowledge update and a one hour skills training session. The knowledge update was to address; i) any knowledge gaps identified during the

training and ii) a number of knowledge gaps which had been previously identified in the development phase of the training. The previously identified gaps were:

- How to make a clinical diagnosis of OA
- The credibility of the NICE OA recommendations
- How to use the NICE treatment recommendations in day-to-day practice

The knowledge update session was led by ZP (academic rheumatologist) and MP. The notes made in training session 1 (appendices 14-17) on topics for this session were used to guide the content of the session but it was also open to any of the GPs to “ask the expert” any questions they wanted advice from a rheumatologist on.

The skills training session had the following objectives:

- To facilitate reflection on the second SP consultation video
- To agree which consultation skills to practise in the session - the agenda
- To undertake the skills training to allow the GPs to develop and practise various aspects of the MOAC-1 consultation which were “on the agenda”
- Provide feedback to the GPs trying out the consultation and facilitate discussion in the group
- Refine the aide-memoire for the consultation to include the learnings from the session
- Agree on a final aide-memoire
- Provide information about the 3<sup>rd</sup> and 4<sup>th</sup> SP consultation video session
- Remind GPs about the time and date for the debriefing meeting
- Allow reflection and feedback on the session

The GPs were asked to complete an evaluation form at the end of the skills session (appendix 22) At the end of the skills session a 30 minute session was timetabled for the NPT study team to conduct a group interview as part of the NPT study.

A number of handouts were prepared for the knowledge update:

- The S factor poster (appendix 23)
- An editorial on “who should have a joint replacement” (appendix 24)
- An extract from a National Rheumatoid Arthritis Society information sheet on diagnosing RA (appendix 25)
- A printout of PROMS data for hip and knee arthroplasty (appendix 26)
- The wear and tear slide (appendix 19)

#### 7.1.1 Logistics

No additional logistic problems to those described for training session 2

## 7.2 DETAILS OF INDIVIDUAL TRAINING SESSIONS

### 7.2.1 Practices AL and AJ GPs



Training Session 3 was undertaken by practices AL and AJ GPs on Thursday 9<sup>th</sup> February at practice AL with MP, VC and ZP from the study team, and AM and LB (social science researcher) for the NPT study session. The SP roles were D (Mary Roberts) played by Sheila Moss and F (Shirley Jones) played by Jean Clarke. Three GPs and one GP in training attended from practice AL and the two GPs attended from practice AJ.

#### Knowledge Update

A prompt sheet was prepared for the knowledge update session (appendix 27) and the following issues were discussed during the session:

- How to make a positive diagnosis of OA and of RA (appendix 23 circulated and appendix 25 given out)
- The use of x-rays in diagnosing OA
- The management of chondrocalcinosis
- When to refer for arthroplasty and PROMS data for arthroplasty (appendices 24 and 26 given out)
- Management of gout
- Management of pain in elderly housebound patients
- What patients mean by wear and tear (appendix 19 given out)

#### Skills session

The session was led by VC and the following were areas covered:

- Reflection on the second SP consultation video
- Discussing how to promote self-management and offer the OA guidebook and clinic
- Practising above with both SPs

*(Note - it was decided after this session that only one SP was needed for this session and the protocol altered for subsequent Training Session 3s with other practices.)*

#### NPT Interview

The NPT session was undertaken after training session 3 for the practices AL and AJ GPs, but did not run very well. The GPs were wanting to leave after two hours of training and 30 minutes was not enough time to explain about the NPT study, consent the GPs and carry out the interview. Consequently it was decided not to undertake the NPT study interview after the two Training Session 3s at practice R as time was already tight for these sessions and to find a separate time to conduct this interview. It was decided to undertake the NPT study interview after Training Session 3 for the practice IB GPs as a whole afternoon had been scheduled for this session.

#### 7.2.2 Practice R GPs

Training Session 3 was undertaken at practice R on Monday 19<sup>th</sup> March at the practice over two sessions (afternoon and evening) as for Training Session 2 with MP, CM, VC and ZP from the study team (also KD for the evening session). The SP role was A (Pauline Evans) played

by Doreen Briggs. Twelve GPs and three GP in training attended a training session. Detailed notes were taken by CM during the training and the main points are summarised below:

#### Knowledge Update

- Afternoon session
  - Main points covered
    - Diagnosing RA (appendices 23 circulated and 25 given out)
    - Diagnosing polymyalgia rheumatic
    - Management of gout
    - Intra-articular steroid injections
    - Referral for arthroscopy
    - Referral for arthroplasty (appendices 24 and 26 given out)
- Evening session
  - Main points covered
    - When to use x-rays in diagnosing OA
    - Diagnosing RA (appendix 23 circulated and 25 handed out)
    - Referral for arthroplasty (appendices 24 and 26 given out)
    - Management of gout
  - The discussion in this session was often between the GPs rather than between ZP, as the expert, and the GPs. This was partly due to the GPs having very recently met one of the local rheumatologists and discussed similar issues

#### Skills session

- Afternoon session
  - Main areas addressed
    - Negotiating / resisting referral for arthroplasty +++
    - Selling benefits of exercise
- Evening session
  - Main areas addressed
    - Reflecting on second SP consultation - GPs felt not much use without individual feedback
    - MP handed out the laminated revised aide-memoire
    - Started work with SP from the beginning - how can I help you and then into the request for arthroplasty / resisting request

#### 7.2.3 Practices IB and AL GPs

Training Session 3 was undertaken by the two GPs from practice IB and one of the new GPs at practice AL on Wednesday 14th March at Keele University with MP, CM, VC and ZP from the study team. The SP role was A (Pauline Evans) played by Doreen Briggs. Detailed notes were taken by CM during the training and the main points are summarised below:

#### Knowledge Update

- Diagnosing RA and OA (appendix 23 circulated and 25 handed out)
- Crepitus as a sign in OA
- Shoulder pain
- Referral for arthroplasty
- MP gave out laminated revised aide-memoire

#### Skills session

- Main areas addressed / discussed
  - Practising a consultation with a patient requesting a knee replacement
  - How to suggest options to the patient, other than surgery, without seeming to resist patient expectations
  - SP reflected that she thought she was being “fobbed off” with a poor option than surgery
  - Explaining what OA is - one GP using very directive style
  - PROMS data on hip and knee replacement

## 8 - Debriefing meeting

### 8.1 OVERVIEW

The debriefing meeting consisted of a one hour lunchtime meeting at each practice. The aim of the meeting was undertake action planning with the practice to facilitate the GPs delivering the MOAC-1 consultation in day-to-day practice. The practice manager, the GPs and the practice nurses were asked to attend the session. The following aspects were covered:

- Reflection on the MOAC-1 training
- The revised laminated MOAC-1 aide-memoire (appendix 42)
- The use of the template for recording when the OA Guidebook has been given to a patient (appendix 30)
- The knee and hip replacement PROMS sheet (appendix 26), if not already handed out and discussed
- The “OA as a repair process” sheet (appendix 31) (*Note - in wave 1 practices this was distributed to the GPs by the nurses attending the MOAC-2 training*)
- The ARUK leaflet order form (appendix 32)
- The details of the nurse-led OA clinic. A one-page digest of one of the research nurses (AF) reports on conducting the OA clinic was handed out to the GPs to inform them about the content of a typical clinic appointment (appendix 41)
- Agreement on when the OA clinics will start in the practice (for wave 1 practices this was delivered by the two MOSAIC research nurses (AF RR))
- Agreement on when the GPs can start to refer patients to the OA clinic
- Awareness that the consultation questionnaire will start to be mailed out to patients who have given consent for medical record review and further contact and in whom the OA template is fired when they consult a GP at the practice
- The OA Guidebook - a supply given to the practice

- The OA Clinic appointment slip (appendix 33) - a supply given to the practice
- Arrangements for paying the practice for study involvement
- Arrangements for third and fourth SP consultation videos
- MOSAICS Training Certificate of Attendance (appendix 34)
- Awareness of the post-training evaluation questionnaire
- Other unanswered questions

In addition, at debriefing meetings which occurred after the MOAC-2 training had taken place, arrangements were made for catch-up sessions for the practice nurses who had missed one or more MOAC-2 training sessions.

#### 8.1.1 Logistics

The dates for the debriefing meetings were arranged at the site visits and none of the dates needed to be altered. The debriefing meeting for practice R had to be held six weeks after training session 3 (it was within two weeks for the other practices) as the practice was planning (at the time of the site visit) to have a new computer system installed in the weeks after training session 3. In fact the installation of the computer system was delayed but it was decided to stay with the planned date for the debriefing meeting. Although there was a delay in holding this meeting, which was needed before the OA clinics could start, the clinics in both wave 2 practices started as planned in May 2012.

### 8.2 DETAILS OF INDIVIDUAL DEBRIEFING MEETINGS

#### 8.2.1 Practice AL

The debriefing meeting took place at practice AL on Tuesday 21<sup>st</sup> February at the practice with MP, CM and AG from the study team. Two GPs and a GP in training attended the meeting. The meeting lasted an hour; the following issues in addition to those raised by the study team were noted by CM as being raised and discussed:

- The use of specific language to describe OA and what is happening in the joint
- The specific expertise the nurse training aimed to equip the nurses with - the GPs asked for clarification of this, and details of the OA clinic (as a handout for patients - this was added to the back of the MOAC-1 aide-memoire (appendix 42) but not produced as a handout for patients)
- The important role of the GP in "selling" the OA clinic to the patients
- A reminder that the new approach was an extension of clinical management and thus responsibility for it rested with the GP and practice nurse
- Which nurses would attend the training and deliver the clinic - this had not yet been decided by the practice and after discussion with the GPs it was decided that MP and AG would meet with the practice manager after the meeting to see which nurses would be available to attend. At that meeting it was discovered that the practice manager had already blocked two of the nurses and one of the HCSWs out of surgery for the first day of training (which was the next week) and subsequent to the debriefing meeting had been given permission by one of the GPs to confirm this. At this stage there was

still debate about whether the nurses would be able to deliver the clinics, but the practice was keen for the HCSW to deliver them

- The study team were informed that two GPs were joining the practice - arrangements were subsequently made for these GPs to attend some of the later training sessions for practice IB

#### 8.2.2 Practice AJ

The debriefing meeting took place at practice AJ on Friday 24<sup>th</sup> February at the practice with MP, CM and AG from the study team. The two GPs, the practice nurse and the practice manager attended the meeting. The meeting lasted an hour; the following issues in addition to those raised by the study team were noted by CM as being raised and discussed:

- One of the GPs had already tried the MOAC-1 consultation out on a couple of patients
- Neither of the GPs had been able to view the DVD of the SP consultation because of software problems. *(Note - this alerted the team to the problem and the DVD were subsequently produced in a different format that could be read by a wide variety of software)*
- Both GPs requested individual feedback on their SP consultations, which MP offered to arrange at a later date
- The GPs were enthusiastic about establishing a new service for OA, based on the MOSAICS intervention
- There was a discussion about how the GPs involvement with the study could be used in their personal development plans, the idea of a template was suggested. *(Note - we have not followed up on this)*

#### 8.2.3 Practice IB

The debriefing meeting took place at practice IB on Friday 30<sup>th</sup> March at the practice with MP, CM and AG from the study team. The two GPs in the practice attended the meeting (they had thought that the practice nurse who will be delivering the OA clinic would be attending but it was not obvious if they had reminded here about the meeting and they were unable to contact her at the time of the meeting). The meeting lasted an hour; the following specific issues were noted by CM as being raised and discussed:

- The content of the nurse training - outline given by MP
- The problem over the baseline population survey mailing - the study team discovered that the practice had a large box of questionnaires, which had been brought in to the practice from the first mailing, but they had not contacted anyone at Keele to discuss what to do with them. The study team again apologised for the mix up in the first mailing and took the questionnaires back to Keele (photo appendix 35)

#### 8.2.4 Practice R

The debriefing meeting took place at practice R on Tuesday 1<sup>st</sup> May at the practice with MP, CM and AG from the study team. Six GPs from the practice attended the meeting (though they attended in three groups which necessitated going over the points to be covered in the meeting three times). MP subsequently had a telephone conversation with the lead research GP at the practice to go over the points and material left at the practice. She agreed to make sure the GPs who had not attended the debriefing meeting were made aware of the relevant points and given a copy of the written material. The meeting lasted an hour and three-quarters; the following specific issues were noted by CM as being raised and discussed:

- The problem with the template firing every time one of the “OA codes” is entered - MP explained that this has been fed back to the study team members responsible for the template and it had been decided not to alter the way the template fired until the end of the study as not all practices had a problem with repeat firing and that it was now needed by the nurses
- That the PROMS data for arthroplasty may increase, and not moderate, the desire for surgery

## **9 - Third and fourth simulated patient consultation videos**

### **9.1 THIRD SP CONSULTATION VIDEOS**

KV organised and undertook the videoing sessions in each practice. The following numbers of GPs were video’d in each practice:

- |                             |    |
|-----------------------------|----|
| • Practice AJ               | 2  |
| • Practice AL               | 2  |
| • Practice R (two sessions) | 12 |
| • Practice IB               | 2  |

The GPs were asked to manage the presenting problem as they would in the MOSAICS trial (appendix 29). There were, as in the baseline SP consultation, given a “patient summary” and paper copy of the template. GPs were given a DVD of the consultation during the video recording session at the practice.

### **9.2 FOURTH SP CONSULTATION VIDEOS**

*Yet to be undertaken*

- |                             |    |
|-----------------------------|----|
| • Practice AJ               | x  |
| • Practice AL               | x  |
| • Practice R (two sessions) | xx |

- Practice IB x

## 10 - GP attendance at the briefing/debriefing meetings and training sessions

Practice AJ (two GPs eligible to attend) - the two GPs attended all the sessions.

Practice AL (seven GPs eligible to attend, one of whom was a GP in training) - two GPs attended all the sessions, one GP attended four, one GP in training attended three, one GP attended two and was then on maternity leave (her locum attended one session and had a catch up session), and one newly joined GP attended two sessions and had a catch up session. Of the three two hour sessions (training sessions 1/2/3) three GPs attended all three and three GPs attended two (one of whom left on maternity leave, her locum attended one of the sessions and had a one to one catch-up with MP).

Practice R (twenty GPs eligible to attend, five of whom were GPs in training) - four GPs attended all the sessions, four GPs and two GPs in training attended four sessions, four GPs and one GP in training attended three sessions, one GP in training attended two sessions and then left the practice, two GPs and one GP in training (who left during the MOAC-1 training) attended one session, and one GP (who was about to retire) did not attend any sessions. Of the three two hour sessions (training sessions 1/2/3) ten GPs attended all three and five GPs attended two.

Practice IB (two GPs eligible to attend) - the two GPs attended all the sessions

## 11 - GP evaluation of the training

### 11.1 GP TRAINING EVALUATION QUESTIONNAIRE

A training evaluation was developed (appendix 22) and GPs attending training session 3 were asked to complete it at the end of that session. Twenty three questionnaires were completed (appendix 28). They were asked to rate the training sessions they had attended including the simulated patient consultation. All the participants enjoyed the training, felt it would help them better manage OA and felt the training was proficiently delivered. All bar one would recommend the training to others and about three quarters felt it would help with other aspects of their practice. However, over 80% felt it covered ground they already knew (table 1).

Statement	Number (%) participants (n=23)			
	Strongly disagree	Disagree	Agree	Strongly agree
I enjoyed the training sessions			16 (70)	7 (30)
The training has helped me to better manage OA			14 (61)	9 (39)
The training covered a lot of ground I already knew		4 (17)	16 (70)	3 (13)
The training has helped with other aspects of my practice		6 (26)	13 (57)	4 (17)
The trainers were proficient in delivering the sessions			14 (61)	9 (39)

I would recommend these training sessions to a colleague	1 (4)	15 (65)	7 (30)
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Table 1 - Participant ratings of the MOAC-1 training and its delivery

When asked about the content of the training over 90% felt it was about right for knowledge about OA and how to manage OA in the consultation (table 2).

Statement	Number (%) participants (n=23)		
	Too little	About right	Too detailed
The content relating to OA knowledge was:		22 (96)	1 (4)
The content relating to managing OA in the consultation was:	1 (4)	21 (91)	1 (4)

Table 2 - Participant ratings of the content of the MOAC-1 training

Participants were asked how confident they felt about the various elements of the model OA consultation. Confidence was generally high for diagnosing OA clinically, offering the OA Guidebook and promoting the OA clinic, but less so for promoting or affirming patients' self-management of OA (table 3).

How confident do you now feel about:	Number (%) participants (n=23)				
	Not confident 1	2	Somewhat confident 3	4	Very confident 5
Diagnosing OA clinically			1 (4)	16 (70)	6 (26)
Explaining OA			4 (17)	12 (52)	7 (30)
Promoting or affirming self-management		1 (4)	6 (26)	9 (39)	7 (30)
Offering the OA Guidebook			4 (17)	8 (35)	11 (48)
Promoting the nurse-led OA clinic			3 (13)	10 (43)	10 (43)

Table 3 - Participants ratings of their confidence in delivering the elements of MOAC-1

The GPs were asked to provide free-text comments under five headings:

1. We would like to know which parts of the training you felt were most useful in getting you ready for delivering the new approach in the consultation?
  - Reinforcing pain management and exercises
  - Positive about nurse clinic - something else to offer



- Explaining the mechanism of increased pain with increased flares
- Giving information for patients to reflect on will help even if they didn't believe, or even like, you
- Mapping OA services
- Simulated patient in group sessions to breakdown consultations and look at different styles
- Discussion with rheumatologist
- Positive approaches to self-management
- Explaining wear and tear, flare and repair model
- Simulated patients in the training session
- "Expressions" to describe OA to the patient
- All the different management options available
- Confidence in diagnosing OA without x-rays
- The consultations were useful and generated interesting discussion
- I did find it frustrating doing part of the consultation, then stopping, as I feel different people consult differently, but understand why we stopped
- Video consultations - doing two is good
- Simulated patient work in groups
- Discussing the OA among us
- Watching consultations
- Watching each other consult and work on technique
- Discussion of patients' understanding of phrases we use and their reactions to them was very enlightening
- This will help me mould my explanations / consultation to the patient
- Group discussion re using different phrases
- Explaining diagnosis of OA / offering different options
- Comparing the two video sessions along with forum to discuss options
- Watching others in consultation
- Simulated surgery was very useful
- Rheumatology Q and A session was excellent
- Brainstorming at session 2 - how the ideal consultation would look
- Simulated patient - although "artificial" allows GP to try out different approaches in order to fine tune the delivery of the OA based consultation
- Practice consulting with patient and analysing the consultation as it went
- Learnt from how other Dr's consulted
- The template is excellent
- The explanation of what OA is and the positive / proactive approach to "what can be done" in terms of the clinic
- Session with Zoe Paskins
- Discussion of diagnosis criteria
- Simulated patient
- Secondary care colleague view
- Template
- Guidebook
- In house sessions
- Meeting with rheumatologist and clarification about diagnosis

- Managing difficult patients scenario
- Excluding other pathology

2. Should we have included anything else?

- Not having any unpacking of the videos felt odd and left dangling, would have been useful to have some individual feedback
- Feedback on videos
- Perhaps some scientific models of OA
- No
- Written published evidence is always interesting. Just the conclusions is enough
- Maybe a summary of up to date evidence on surgery / consultations etc
- Don't think so
- Individual feedback on video sessions
- No
- No. comprehensive handouts have been very useful
- Just right
- A session on what the nurses will be offering in their clinics - an abbreviated video of the four sessions they will offer?
- I know exactly what my nurse does/delivers in the asthma/diabetes/COPD clinic - don't know what she does in theses clinics
- Don't think so
- Psychological component
- Treatment plan

3. We are going to offer a shorter version of the training to the control practices at the end of the study. We would like your opinion as to which parts we should include and which we could leave out

- INCULDE
  - More direct information about OA
  - Differential diagnosis
  - Ways of dealing with difficult patients
  - Promote activity / exercise
  - Flares >> increased pain
  - Promote analgesia
  - Remind to give booklet
  - Remind to refer to nurse
  - Rationale for active management
  - Simulated patients to try out explanations / giving diagnosis / promoting self-management
  - Self-management information / books

- Descriptions of OA
- Natural progression of disease
- Other management options
- Consultations
- Simulated patients
- Videos
- CD of OA
- Consultation skills practice
- Definitely about the "what does "wear and tear" mean" leaflet and the PROMS questionnaire - very enlightening
- Ability to see others consulting with patients
- Rheumatology Q and A
- Simulated surgery
- Keele simulated patient - stop/start consultation
- Perhaps shorter version of OA book if possible - more practical in non-research situation (cost)
- Own videos to compare pre and post training to critically review alone or with Drs of same practice
- Zoe Paskins
- Simulated patients
- Session with Rheumatology
- 3<sup>rd</sup> session
- LEAVE OUT
  - Too simple at the beginning
  - The videoing with the Pt as actually it did not move it on at all since we re role-played it (*Note - handwriting difficult to read*)
  - Rheumatologist info
  - Personalised video consultations
  - Videos
  - Video
  - The difficult pts!
  - Discussion re all the local services etc
  - Introductory session
  - Video
  - n/a
  - Simulated patients (if limited by time)
  - NIL
  - Expert patient role play amongst colleagues
  - Staff briefing - irrelevant re admin / reception staff - time consuming
  - Simulated patients

4. Any other comments

- Making it clear at the beginning that it is about managing the consultation as most on the OA
- Thanks for the help!
- Very good thank you
- Fabulous trainers (organisers and making the process enjoyable and non-patronising)

## 11.2 GP COMMENTS FROM NPT STUDY DATA

During the NPT session after training session 3 a number of comments were made by the GPs about the training:

MNPT 16: I think from the study point of view which is what we're trying to say here, is if we were to implement this everywhere, is there a very positive impact, and I think that's what we are saying. The way the study is set and the way the training is set, does have a positive, we do feel enthusiastic, we do feel more confident, so the whole process of this study is to prove whether or not different way of doing something helps.

MNPT17: I think the evidence based part of the course has helped as well, sort of reaffirm those statements really. They are grounded in fact rather than just assumptions.

MNPT15: [...] So I think it's been helpful just in terms of OA itself, but I'm not sure if I could have achieved that if we'd had just a half a day session lecturing time, or round table time, on OA and on examination of OA, and positive things that can be done. [...] And I feel more confident about OA having come here, but I'm sure that could have been - that element could be compressed because I don't think I have any difficulty, and I'm sure any GP would have very little difficulty getting people into the clinic, I don't know if you disagree with that? (referring to other participants)

MNPT16: Yeah. I think that it's easy to look outside and think we could have done it in half a day or one day, and got all these things, but I actually think that when you've done it, there's a lot of knowledge which is coming in slowly, you don't realise. So I actually think it's the right pace. I don't think that I could have just sat one afternoon intensely and got everything. Because things are coming slowly, I'm not even realising I'm learning it. And I do think the pace is right. So I wouldn't like it shortened. I actually think - if you ask somebody would you like this shortened, they'd say yes, if someone finished doing it, they would say this is the right width, that's what I think.

Excerpt below is a discussion between three GPs.

MNPT15: I mean I don't know whether it's - it's not personalised, I guess it is, but I think the guys that have been involved are absolutely fantastic.

MNPT16: It's coming from a GP background, I always worry about research going to be from a rheumatology, sort of 'I'll tell you what...'

MNPT15: Absolutely non patronising, we just - patronising is a strong word, there must be a better word, but often you can be talked down to by specialist nurses or other specialists, but I thought all the guys were so much at GP level. We were treated as colleagues.

MNPT16: We were treated as colleagues. And they were, or they appeared to be full general practitioners and they fully understand our job.

MNPT15: I think that's a huge knock on effect because I think if it had been - I genuinely would, if we had been talked down to, I'd have just stepped out of it. But sometimes when you go to these lectures or conferences and things like that, you can be talked down to.

MNPT16: I mean, there are general practitioners who are what we call gypsies, [laughs] they're specialised in that, and they forget they're general practitioners actually, they just want to be specialists who happen to be doing general practice and these general practitioners or the people involved in this never gave that type of impression at all.

MNPT15: Immensely supportive. MNPT17, you're closer to training than we are, do you see this at all or not?

MNPT17: Yeah I met Mark and Vince (MOSAICS team) before on the (says name of training - hard to distinguish), on one of the modules, and they're the same as they are today, they're very approachable and I think the...

MNPT16: Non judgemental.

MNPT17: Yeah so they treat you as colleagues rather than say teacher.

MNPT15: I really think that kind of carries a lot of weight for what it's worth.

Dialogue:

MNPT28: Yeah, I think first of all it [training] made you try to take a more positive approach, rather than just say, 'Well, you've got arthritis.' And I think it also gives you a

few more strings to your bow, really, in terms of what you can tell the patient, what you can inform them, what we'd be able to offer through a clinic. Yeah, good.

Interviewer 1: Did you feel the same, MNPT27?

MNPT27: Yeah. Certainly it does give you - you really think about it a bit more and certainly on role play, it's been - well, it makes you think about the questions that patients come up with and how you can work around it. Rather than having to think from scratch yourself, you can see how other people deal with it and you realise that actually we all come across those problem patients who think they should all have everything x-rayed and everything seen by a specialist.

Dialogue:

MNPT27: Yeah, because the training sessions, it's just if you're not in on that particular half day or what have you, you either have to come in for them or the surgeries are being moved round, what have you.

MNPT28: I think it was hard logistically, wasn't it? It was hard.

Interviewer 1: But was it worth it?

MNPT27: From a personal point of view I think it probably was, yeah. Whether or not it has been for the patients ...

MNPT26: Do you feel that it needed as much time? That's perhaps the thing, perhaps ...

MNPT27: I think it could have been quicker.

MNPT28: I think it could have been condensed, yeah.

Interviewer 1: Like what?

MNPT27: I think some of the - when we were talking and running through role play and things, we had two and a half hours of that, didn't we, which I felt we could have probably done it in about an hour and a half.

Interviewer 1: You fed that back to Mark?

MNPT28: I can't remember if I fed that back to Mark.

MNPT26: You didn't have time to, did you? [laughter]

MNPT28: I do think part of the problem is, for us, that we don't sit and talk; we just go from one thing to another. So to then come into that sort of setting where actually we've got two and a half hours to think through everything is really artificial because naturally we're all wanting to get on to the next thing, I think.

Interviewer 1: You mentioned earlier, MNPT27, that you thought it was quite interesting to see sometimes how other people solved the problem.

MNPT27: Yes, it was. As I say, personally I think it has been beneficial for me. Whether or not it is for the patients yet, I don't know. But I think what I gleaned from it, I could have got in a shorter timescale. May have been happier with an hour and a half rather than two and a half.

Separate excerpt:

MNPT28: I suppose the only thing that actually did come out, we did feed this back to Mark, was it would have been really helpful to know right at the beginning, or earlier on, what the nurses were going to be doing, what we were referring into, really, what the clinic was about. Because that only came about, I think, because some of us actually said, 'What exactly are they going to be doing?' And then Mark said, 'Oh yes, let me tell you.' And then that was quite helpful for us to know, because I think it was before we'd actually seen the booklet, or before most people had seen the booklet. I think I'd seen it. So I think maybe at the beginning we could have done a bit more work together with the doctors and nurses, maybe just to say, 'This is what will be happening in the doctors' bit and this is what will be happening in the nurses' bit.' I think we've disjointedly got the picture, from what the nurses have fed back to us and from what we've told one another, but I think maybe at the beginning that would have been ...

## **12 - Reflections on MOAC-1 training**

### **12.1 OVERALL REFLECTIONS FROM CM**

- Despite presumably a similar prior pitch to each of the practices; variability in extent of "buy-in" evident at 1<sup>st</sup> session. Maybe inevitable but might be worth reflecting on how we approached each of the practices initially and whether finding and working up a project champion as a specific strategy

- As expected, differences in the relationship between the GPs and the nurses in the various practices and may be worth stressing our requirements that the nurses attend. Certainly in terms of future Sentinel practices, some checklist on the "health" of the practice might be worth exploring
- Not much engagement with own DVDs, not all because of technical difficulties.
- DVDs of simulated patient consultations may be a step too far at such an early stage. Can of course be required of medical students being trained in interview skills. Doesn't really seem to have been worth the effort to set these up. Maybe we should consider the request to give them individual feedback. I really the value of a before-after appraisal to assess the efficacy of our training but I think we need to appraise how we are doing it
- Seems to me as an observer that we were dealing primarily with knee OA, to a lesser extent with hip OA and hardly at all with minor joints
- We haven't really tackled presentation with multiple joint OA
- Variability of engagement in the opportunity to raise issues with ZP. Should we provide a one-page acetate with (a) differential diagnosis of OA/RA and (b) when to refer. Useful of course to explore their decision making before making the recommendations. Might be worth thinking if there are ways of improving it (thought actually seemed a useful session)
- Not sure how relevant my stuff on why pain persists and the nature of chronic pain in fact was since it didn't come up in the consultation. I still think it is important, should we consider encouraging the GP or perhaps the nurse specifically to ask the patient as part of the explanation of what OA is, to add in a piece about the persistence of pain. I think we need to reconsider whether or how we actually tackle persistence of pain
- I think MP was right about the value of "context-bound" training and I understand the difficult logistics of getting even one practice together. The discussion was just so much more useful when there was an opportunity for group learning and a shared discussion
- The use of SPs was certainly worthwhile, but didn't all work equally well. It may be worth briefing them more to raise specific questions and be able to offer a range of related further supplementary responses. Obviously we need to discuss all this with VC
- We didn't make all that much use of the guidebook and language used to sell MOAC-2 so the next time round we must get through the entire GP consultation
- Not all GPs engaged in the role-play, maybe inevitable. I realise we don't have that much time available
- I think we can now feel a little more confident about selling a standardised approach to the consultation without needing to be quite so nervous about bruising the GP sensibilities
- Interesting to get feedback on perceived value of the written materials we gave them. I just don't know whether or how they made use of the articles



- I have no doubt at all that MP as the GP champion enabled a much higher level of engagement that would otherwise have emerged. His contribution was superb.

## 12.2 REFLECTIONS FROM VC ON DELIVERY OF CONSULTATION SKILLS TRAINING IN TRAINING SESSIONS 1 AND 2 TO ALL THE PRACTICES

- GPs generally hadn't watched their videos, so opportunities were wasted and the sessions got off to a hesitant start through lack of preparedness
- Some GPs quite reluctant to get involved, though overall response was encouraging and some saw it as a unique developmental opportunity
- More enthusiasm for discussing than doing – need to be kept on track
- Huge variation in reflectiveness
- Wide variation in GPs' general consulting skills and styles
- Some GPs just didn't get it and demonstrated identical behaviour in consultations throughout training
- Difficult to know, as a facilitator, how challenging to be – already slightly threatening situation for some GPs
- A lot of what we are doing is generic consultation skills – only once collaborative consulting style is achieved can MOAC-1 goals be achieved
- Very facilitator-dependent, with resource implications
- SP feedback to GPs seemed to hit the mark at times – we used it sparingly
- Using same SP for a training session as for their last video seemed to work particularly well – encouraged them to think and make linkages; also to compare approaches and assumptions they had made (esp. 2<sup>nd</sup> session at practice R)
- Variety of group size, practice R probably a bit too big (but lively and manageable) and session at Keele for practice IB GPs too small

## 12.3 REFLECTIONS FROM MP ON REVIEWING THIS REPORT

- There was at various times in all the intervention practices difficulty in getting practice level decisions made and with internal practice communications. A lead clinician and manager in each practice for the study, with clear set out responsibilities for the study may have reduced difficulties. At practice R a GP did take the lead for the study and was happy to disseminate information and materials to the other GPs. In addition at practice K the lead nurse at the practice took the lead for the study for the nursing

team - again very helpful. However, we don't know how effective the internal practice dissemination was.

- The use of the SP consultation videos did not work as well as anticipated in the training:
  - GPs unable or unwilling to view the videos
  - There were IT issues in the GPs being able to view the videos which we had not anticipated
  - Individual feedback was not given to the GPs on their recorded consulting - a methodology used in the original context-bound training studies (either during the training from transcripts or by a participant giving and receiving individual feedback to and from another participant) and something many GPs requested this at various times during the training
  - However, GPs were able to use their recall of undertaking the SP consultation during training sessions 2 and 3
- No GPs, or practice nurses, brought a specific case history to training session 1, though they were able to recall issues and problems with the management of OA during the session
- The sessions were enjoyed by both the participants and the trainers. The energy, professionalism and non-judgemental approach of the trainers was recognised and appreciated. The sessions were interactive with a lot of the work being done by the participants. This approach enabled the trainers to be viewed as opinion leaders and was possibly instrumental in the GPs having a positive attitude to the training, to OA and to the MOSAICS intervention. This was possibly the most important element of the training.
- The extent of GP background knowledge and attitude to OA was not formally checked during the training (though was enquired about in the baseline training evaluation questionnaire) and some of the content of the training could have been too basic for some of the GPs. Many commented that we cover ground they already knew.
- GPs did not have a problem with the credibility of NICE or the recommendations in the NICE OA Guideline - there was no disagreement about the approach to the management of OA promoted in the Guideline or in the MOSAICS study - we could have spent less time preaching to the converted. But some were not aware of all the treatment options for OA and so covering this was helpful
- The area the GPs had the most difficulty with was the patten for OA: what to call it, how to explain it (especially articulating the repair aspect of OA)

#### 12.4 DEGREE TO WHICH TRAINING OBJECTIVES MET

The target group analysis undertaken prior to developing the MOSAICS GP training, and to inform its development, identified seven domains which needed to be addressed to affect behaviour change in the GPs(table 1). The desire behaviour is that the GPs deliver the MOAC-1 consultation to patients presenting with peripheral joint pain.

Determinant of behaviour change domain	Aspects of determinant identified in target group analysis
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Knowledge	Epidemiology and impact of OA, NICE OA guidance, self-management of OA and its support by GPs, rationale for making the diagnosis of OA clinical, MOSAIC study procedures
Skills	Making the diagnosis of OA clinically, delivering MOAC-1
Social / professional role and identity	Credibility of NICE and NICE OA guidance, support for self-management
Beliefs about capabilities	Time to deliver MOAC-1, previous difficulties in managing OA
Beliefs about consequences	Efficacy of OA interventions recommended by NICE
Memory	Remember the elements of the MOAC-1 consultation when needed
Motivation and goals	OA and its management not a high priority for GPs

**Table 1 - Determinant of behaviour change domains identified in target group analysis, and identified aspects of these domains**

The extent to which these aspects have been successfully addressed is summarised in table 2. The evidence used to substantiate these statements is the: i) GP report in the MOSAICS GP Training Evaluation questionnaire and ii) comments and reflections listed in this report.

<b>Determinant of behaviour change domain to be addressed</b>	<b>Extent to which determinant successfully addressed</b>
Knowledge	The aspects for this domain listed in table 1 were covered in training session 1 and in the knowledge update in training session 3. In general there was good engagement by the GPs in these sessions and 96% of the GPs felt the content was about right.
Skills	Skills needed for making a clinical diagnosis of OA were discussed in the knowledge session in training session 3 (excluding alternative diagnoses) and the differential diagnosis of OA at the hip and knee were listed in the aide-memoire. 96% of the GPs rated themselves as more than "somewhat confident" in diagnosing OA clinically. Skills to deliver MOAC-1 in the consultation were discussed and practised in training sessions 2 and 3 and rehearsed by the GPs in SPV2. GPs received feedback after trying out elements of the consultation in training sessions 2 and 3 but many requested feedback on their SP consultation, which was not included in the training. The skills training sessions covered, giving and explaining the diagnosis, promoting self-management (often as part of the explanation), offering the guidebook, "selling" the OA clinic and addressing expectations (notably a request for a surgical referral in training session 3). However, it was not possible for every GP to practise and receive feedback on all aspects of the consultation, although they all observed all aspects being practised and the feedback given. The

	GPs reported a high level of confidence in delivering the elements of the consultation apart from promoting or affirming self-management (30% somewhat confident or less). Mixed views were expressed on the usefulness of simulated patients in the training.
Social and professional role and identity	No negative opinions were voiced about the NICE OA Guideline, or NICE in general. In fact the reverse: the view that exercise and weight loss were beneficial was universally accepted as was the need for patients to self-manage their condition.
Beliefs about capabilities	Many GPs raised lack of time as an issue when managing OA but the provision of the OA clinic was seen as an solution to this problem. GPs did raise difficulties in managing OA (and we specifically enquired about this). Managing patients with co-morbidity was discussed but the problem of managing OA in housebound patients was not addressed in the training as the OA clinic could only be provided at the practice.
Beliefs about consequences	NICE recommended treatments were generally viewed as effective though there was no detailed discussion as to how effective they were.
Memory	A laminated aide-memoire was produced for each GP.
Motivation and goals	There was almost universal positive engagement with the training and planning to deliver the new service. GPs were happy to "sell" the OA clinic to their patients and were pleased they had a positive message to give their patients. They seemed genuinely motivated to address OA as promoted in the clinic, though perhaps more through referral to the nurse than enhancing the GP consultation.

**Table 2 - The extent to which the training successfully addressed behaviour change domains**

### 13 Suggestions for future OA consultation GP training

The following are some initial thoughts on how the control practice training could be developed and delivered:

- The requirements of the OA Sentinel Practice Scheme need to be considered when developing the content of the training
- The training needs to be interactive, based on adult learning theory and use the same trainers as before
- The training needs to include practising consultation skills and giving individual feedback
- There needs to be a lead GP and manager in each practice to take responsibility for organising practice decisions and communication for the training, and for the OA Sentinel Practice Scheme
- The training does not need to include practice admin and reception staff
- The initial session could start with a mapping of care of OA **in the consultation** - making, giving and explaining the diagnosis, addressing expectations, support self-management, providing evidence-based advice on treatment options - from which could be derived the elements of MOAC-1/2 (as in the evening session in training session 3 at practice R) - THE WHAT ARE WE DOING NOW

- This could be followed by didactic key messages from the study team on HOW to: i) make, give and explain the diagnosis, ii) support self-management, iii) implement the NICE OA recommendations (the MOAC-2 OA explanation sheet could be used here). Understanding and agreement would be sought for these messages - THE WHERE DO WE WANT TO BE
- Video'd SP consultations by MP or participants in the first MOAC-1 training (with relevant permissions) could be used to demonstrate consulting for OA
- Written material could be provided on epidemiology, impact, prognosis, and include subjects covered in the knowledge section of training session 3 and the handouts used for this session
- THE HOW DO WE GET THERE needs to include the GPs practising consulting skills and receiving feedback - this could be achieved by the use of SPs in the training, GPs undertaking video'd SP consultations and receiving one-to-one feedback on them.
- Consideration should be given to the use of demonstration of consultation skills - for example use of videos of MP consulting SPs, or, with permission, MOSAIC GPs consulting SPs (from the intervention practice training)
- Practising OA consultations skills could be promoted in day-to-day practice - but their needs to be a formal system to record this, allow reflection and give feedback
- Consideration should be given to having shorter sessions - say 1 ½ hours max
- Alternative suggestion for training session 1 - 1<sup>st</sup> hour mapping session (with consultation focus) / OA knowledge session, 2<sup>nd</sup> hour brainstorming the MOAC-1/2 approach and setting the agenda for the nurse and GP separate sessions.
- Suggest have first training session, as above, with GPs and PNs, then separate training session(s) for GPs and PNs and a final short combined session
- Need to use the OA patter developed in the GP and PN training in subsequent training, and not start from a blank sheet (as we did this time round)
- Revise SP scenarios, not hip and not arthroplasty expectation

## **14 - Development of simulated patient scenarios, biographies and training**

### **14.1 INTRODUCTION**

The method of training adopted for the MOAC-1 GP training was informed by previous studies which had utilised context-bound training to change clinical behaviour (refs). In some of these studies simulated patients had been used to assess change in clinical behaviour by recording and analysing GP consultations with these simulated patients. A simulated patient is a person who takes on the role of a patient and is trained to present specific symptoms and have specific beliefs and attitudes which are relevant to the objectives of the training.

Simulated patients have also been extensively utilised in communication skills training for undergraduates and doctors undergoing general practice training. In these setting the simulated patients are often used in group teaching sessions to allow the trainees to practise consultation skills and receive feedback from other trainees and those facilitating the sessions. (ref Leicester book)

It was decided by the study team while developing the MOAC-1 GP training to utilise simulated patients to simulate a patient presenting to the GP with a chronic peripheral joint problem. This was utilised for three purposes:

1. To enable a video recording to be made of the GPs in intervention practices consulting such a patient to:
  - a. Assess change in GP consultation behaviour - before compared with after the training - by rating the video recorded consultations with a scoring system to measure elements of an "OA consultation"
  - b. Allow the GPs to reflect personally on this consultation, as part of the MOAC-1 training, by giving the GPs a copy of the recorded consultation
2. To enable GPs attending the training to practise, and receive feedback, elements of the model OA consultation during training sessions 2 and 3 by having the simulated patient present in these sessions

It was also decided that simulated patients should be utilised in the MOAC-2 training and the needs of this training were considered when developing the simulated patient capacity, but are not covered in this report. A brief was drawn up for the use of simulated patients in the GP training as part of the MOAC-1 training manual and SP schedule (version 5 - appendix 47).

There were a number of stages in developing the capacity to use simulated patients in this way:

1. Development of the scenarios the simulated patients would present to the GPs
2. Recruitment of the simulated patients
3. Training the simulated patients in their roles and development of the simulated patient biographies
4. Organising the logistics of the use of the simulated patients for the video consultations and training sessions 2 and 3

The experience of utilising the simulated patients for video recorded consultations and training sessions 2 and 3 is described above under the relevant sections (sections 3, 5, 6,7 and 9)

## 14.2 SCENARIO DEVELOPMENT

The scenario for a simulated patient consists of the problem which the patient is to present with, their past medical and social history, their ideas, concerns and expectations about the problem and, for this scenario, their knowledge and beliefs about OA and its treatment. At a meeting of members of the study team (MP VC CM KD EH (previous lead for nurse training) AM) it was decided that the simulated patient scenarios needed to reflect the issues which the GP and nurse would be asked to address when delivering the MOSAICS intervention. The key issues which the group felt needed to be considered when developing the simulated patient scenario were:

1. The self-management of OA
2. What OA is, its prognosis and treatment

3. Pain management for OA
4. Exercise and physical activity
5. Diet and weight loss

The group drew up a list of ideas, beliefs, attitudes, expectations about these issues which they had encountered in clinical practice and in qualitative research interviews. The list included:

1. Self-management
  - a. Patient expectation of the consultation - might be for oral medication or a surgical referral and not help with self-management
  - b. The use of complementary therapies
  - c. Feeling that self-management advice is not appropriate for them as already "doing it"
  - d. Patients having exhausted their coping strategies and wanting the professional to take over
  - e. The interference of self-management on daily life - the "hard work" of being a patient
2. What is OA, its prognosis and treatment
  - a. Beliefs such as: inevitable part of ageing, inevitably progressive, same as Rheumatoid Arthritis, that nothing can be done
  - b. The complexities of lay understandings of OA such as: caused by previous "hard work" or previous injuries, linked to getting older as their peers also experience pain
3. Pain management
  - a. Use of complementary therapy
  - b. Strong belief in a treatment with no proven benefit
  - c. Unrealistic goals, for example to be completely pain free
  - d. Interaction of analgesics with other medication
  - e. Misunderstandings about the optimal use of analgesia
  - f. Previous negative experience of analgesia
  - g. Fear of not masking the pain with analgesia
4. Exercise and physical activity
  - a. Expecting something from the consultation
  - b. Sceptical and cynical about the benefit of exercise
  - c. Not liking gyms
  - d. Worries about how exercise might affect other conditions and whether it is safe
  - e. Previous advice from healthcare professionals, such as being told that they will only benefit from joint replacement
5. Weight loss
  - a. Expecting something else from the consultation
  - b. Previous (negative) experience of losing weight
  - c. Financial constraints in affording a healthy diet
  - d. Sceptical about the benefits of weight loss
  - e. Unrealistic goals, such as losing a stone in a month

The list was debated, expanded and modified and a final list of issues to be considered in developing the simulated patient scenario drawn up (appendix 36).

On reviewing the list it was decided that three basic scenarios should be developed, each one having different ideas and concerns about the nature of OA, different co-morbidities, and each one covering a different aspect of self-management: exercise, weight loss and pain management. It was also decided that each scenario would have two versions with different presenting symptoms: one with chronic knee pain and one with chronic hip pain.

Scenarios A (knee) and B (hip) consisted of a patient with ischaemic heart disease, who had tried simple analgesia and thought their problem was due to "wear and tear". They had concerns about exercise for example, that exercise was not safe and that it was difficult to exercise locally (appendix 37).

Scenarios C (knee) and D (hip) consisted of a patient with diabetes who had tried over the counter painkillers and was concerned they had rheumatoid arthritis. They were overweight and had tried to lose weight many times before and had not succeeded (appendix 38).

Scenarios E (knee) and F (hip) consisted of a patient with hypothyroidism who only occasionally took painkillers and thought they had arthritis as they are getting older. They had concerns about taking tablets which they thought were addictive and often give them side effects (appendix 39).

### 14.3 RECRUITMENT OF SIMULATED PATIENTS

The MOSAICS protocol states that members of the Keele Research User Group (RUG) were to be involved with delivering the GP and nurse training for the study. The study team explored the idea that members of the RUG could be trained to be simulated patients for the study with CR (Patient and Public Involvement Coordinator at the Centre) and it was decided to gauge the opinion of the RUG members about doing this by sending them information about simulated patients. A flyer was developed (appendix 43) and sent to members of the Research Users Group who were known to have osteoarthritis. The replies and enquires to CR about this were discussed by the study team and it was decided that the task of being a simulated patient for the MOSAICS study would be too onerous for all those who might be eligible - in view of the amount of time needed, the need to be able to commit to specific dates some four months hence and the amount of travelling to the practices.

Keele University Medical School has a long established pool of simulated patients for undergraduate and postgraduate teaching and the manager of this pool (GP) was approached about recruiting simulated patients for the study from this pool. GP felt, after discussion with MP and KV, that she knew several people registered with the pool who would match the person specific drawn up for the study (appendix 44) and agreed to approach them. Six people from the pool agreed to consider undertaking this role for the study and attended a short briefing meeting on Tuesday 23<sup>rd</sup> August. They were briefed on the role and the requirements of fulfilling the role and all agreed to undertake the role and were invited to attend two half day training sessions.



#### 14.4 Simulated patient training and development of biographies

A programme was developed for the two sessions (appendix 45). All six simulators attended both sessions.

The first session consisted of:

- A warm-up session using two scenarios developed for the training (appendix 46) to ensure the simulators were able to undertake the “pause, rewind and feedback” functions needed for the training sessions
- Allocation of a scenario to each simulator and discussion of the scenarios
- Handing out and asking the simulators to read the OA Guidebook - for background information on OA
- Instructing the simulators to construct a biography for their simulated patient and send the biographies in prior to the second training session.

The second session consisted of:

- Further discussion about the scenarios and biographies (all biographies - appendix 48)
- A run through of a MOAC-1 consultation with each of the simulator in role, with MP playing the GP. All the simulated patient consultations were video recorded
- *Not sure what we did then - check notes and with CM and VC*

#### 14.5 LOGISTICS OF THE USE OF SIMULATED PATIENTS

KV organised the schedule (appendix 49) for the simulated patients to be available for:

1. The first MOAC-2 training
2. The SP consultation video recording at the practices
3. The MOAC-1 training
4. The second MOAC-2 training

One simulator (playing role C) did not undertake any of the above as he found alternative employment.

#### 14.6 VC REFLECTIONS

SP scenarios, recruitment and training

- Scenarios were appropriate to the training needs and interchangeable between SPs
- Having scenarios separate from SP names and detailed roles was helpful
- SPs developed their roles around the scenarios quite well though some altered detail which confounded the issues a bit (e.g. friend with RA became relative with RA so altered approach)
- Developing levels of challenge as a separate parameter, applicable to scenarios generally, seems worthwhile though perhaps needs some more work and training input

- SPs were rather uniform as a group – age, ethnicity, education (but not easy to alter this)
- Specific training sessions for SPs were an important component but costly to implement
- Some SPs were trained but then unavailable – should we consider developing an independent SP “bank” if there is more of this activity
- SPs were convincing and quite consistent
- Those SPs who were available were reliable, turning up to distant practices on time

**Appendix 7.2 Presentation for pre-workshops briefing meeting (practice  
A)**

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National Institute for Health Research  
K E E L E

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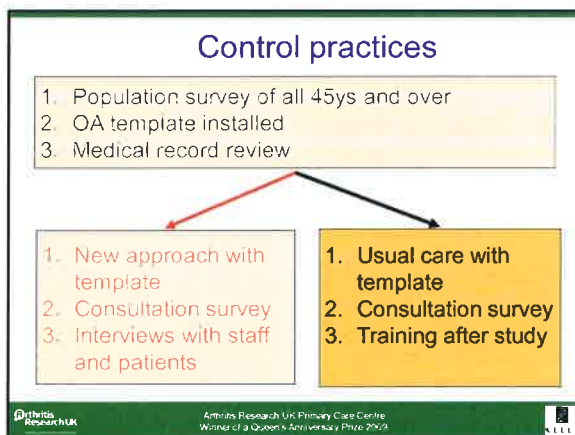
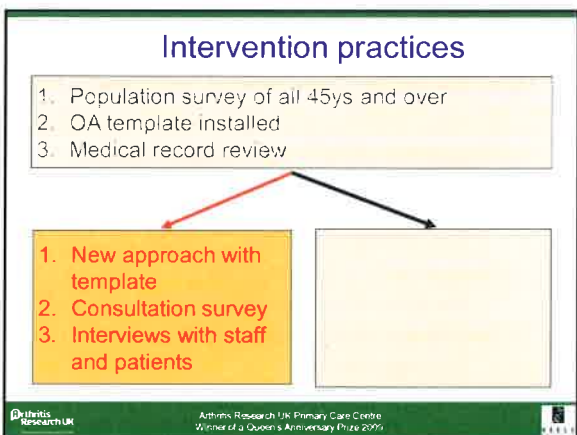
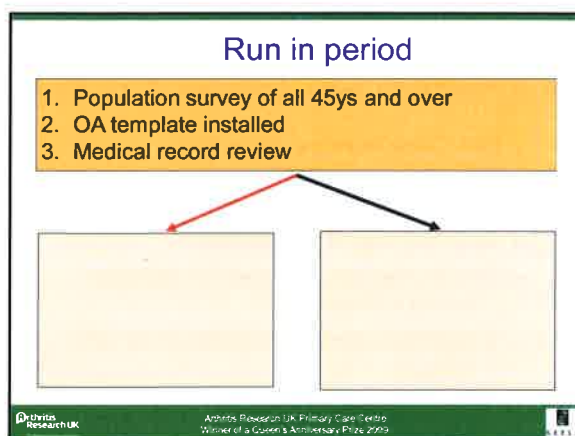
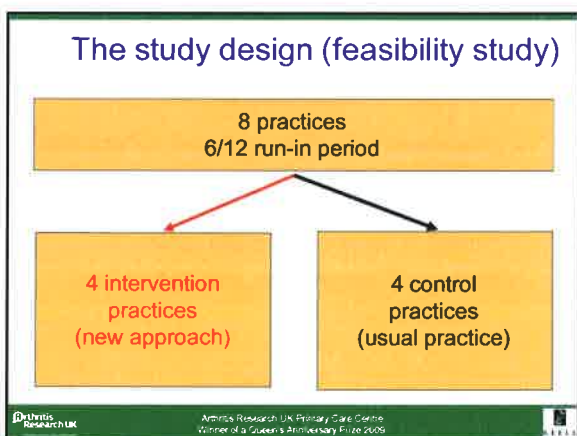
**Managing Osteoarthritis In  
Consultations  
MOSAICS**

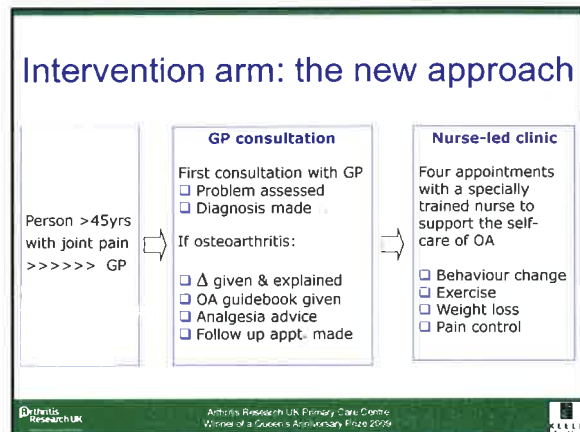
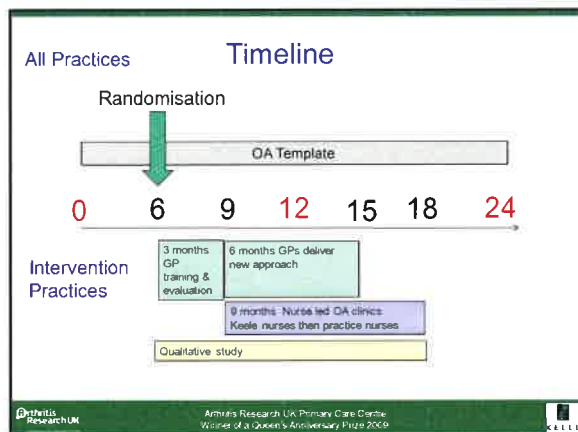
Briefing session – post randomisation  
Amended 9 Dec 12

## Overview

- Where we are in the study
- Allocation to intervention or control arm
- What happens next
- Feedback on template use

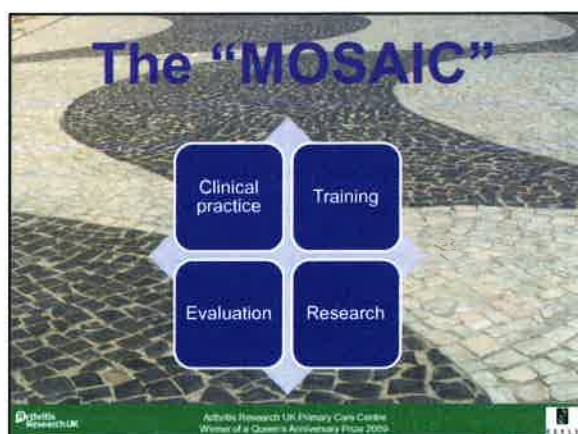
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- ### Intervention arm: training & delivery
- Delivering the new approach
    - Starting in March 2012
    - Enhanced clinical care (cluster RCT)
  - Ongoing use of the template
  - Whole practice, GP and PN training
    - Starting in January 2012
  - Simulated patient consultation by GPs
    - Next week
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- ### Intervention arm: research & evaluation
- Interviews with GPs, practice nurses and patients
    - March 2012 to end of study
  - Sitting in on nurse-led OA clinic
  - Survey of patients consulting for OA
    - Starting March 2012
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- ### Whole practice, GP & PN training
- Session 1 (PHCT – GPs and PNs)
    - Introduction to delivering the new approach
    - How is OA being managed now
    - What would be good to have in the training
  - Sessions 2, 3 and 4 (GPs)
    - How to deliver the new approach
  - Nurse-led clinic training (PNs)
    - Four days at Keele
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Give out case  
history sheet

## Case histories

- Older patients with joint pain / OA
- Examples of
  - Care that went well
  - Problems with diagnosis
  - Problems in treating pain
  - Problems with referral
  - Complex management
    - Very elderly / "young" at presentation
    - Co-morbidities

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Give out training  
schedule

## GP training

- Video and training dates
  - 1<sup>st</sup> video session Tues 13 Dec 11 (11:30)
  - 1<sup>st</sup> training session (half day) Tues 10 Jan 12 (12-2:20)
  - 2<sup>nd</sup> training session (half day) Thurs 19 Jan 12 (1:30-4)
  - 2<sup>nd</sup> video session Tues 31 Jan (am)
  - 3<sup>rd</sup> training session (half day) Thurs 9 Feb 12 (1:30-4:45)
  - 4<sup>th</sup> training session (one hour) Fri 24 Feb 12 (1:30-2:30)
  - 3<sup>rd</sup> video session Tues 6 Mar 12 (am)

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KEELE

## Simulated patient videos

- One before training
- One during training
- Two after training
- Purpose
  - For use for the training
  - To evaluate the training
  - Not viewed by facilitators
- Only if consent given



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## 1<sup>st</sup> simulated patient video

- 10 minute consultation (20 mins allowed for)
- Patient with a joint problem
- Manage the presenting problem as you would normally

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KEELE

Give out training  
schedule

## Practice nurse training

- 1<sup>st</sup> training session (half day)
  - Tuesday 10<sup>th</sup> Jan 2012 (12-2:20)
- Nurse-led OA Clinic Training
  - All day at Keele
  - Wednesday 29<sup>th</sup> February
  - Tuesday 6<sup>th</sup> March
  - Thursday 15<sup>th</sup> March
  - Wednesday 21<sup>st</sup> March

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## SLA, money and indemnity

- Service Level Agreement
  - Mutual roles and responsibilities
- Regular payments for large expenses
  - Locum payments
  - Nurse salaries
- Indemnity
  - The intervention is "clinical practice"
  - MDU and MPS opinions

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KEELE

I can confirm that GPs delivering the enhanced consultation as part of their usual clinical care of patients would not be required to pay any additional subscription; nor indeed would they need to inform us specifically of their involvement in the study.

The MDU would consider this work to form part of their 'provision of professional services', which is covered under the terms of the policy of insurance issued to members (assuming of course they have paid an appropriate subscription for the number of GP sessions they undertake each week).

### MDU opinion

Dr James Armstrong  
Head of Underwriting

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I note what you say and, in particular, that there is full ethical approval, funding, a sponsor in place and that the GPs are acting within their competency and experience, albeit in an enhanced consultation.

..... I am happy to confirm that any GPs who are members of MPS will be indemnified for their own personal acts and omissions in respect of carrying out the protocol.....

There would, however, need to be more specific enquiry made regarding indemnity issues in respect of the involvement of any Practice Nurses, since indemnity cover would depend upon their respective employment status.....

### MPS opinion

Dr Iain Barclay  
Head of Medical Risk and Underwriting

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Give out leaflet  
pack

## OA and patient information

1. NICE OA guideline
2. OA Hands On
3. Arthritis Research UK – two leaflets
4. Arthritis Care – five leaflets
5. Where to order more from

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## OA Sentinel Practice Scheme

- Ongoing partnership
- Enhancing care for people with osteoarthritis
- Opportunity to influence the research
- Supporting innovation and quality improvement

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## Questions

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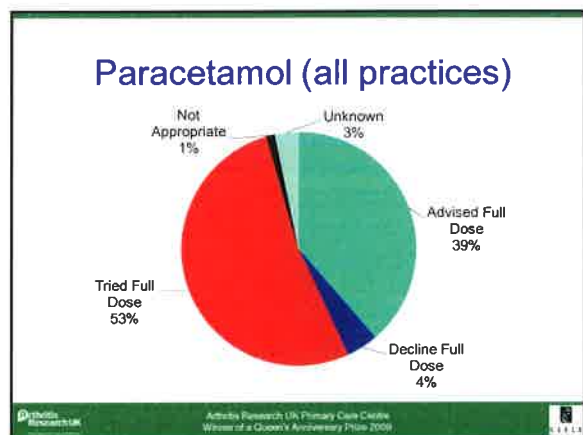
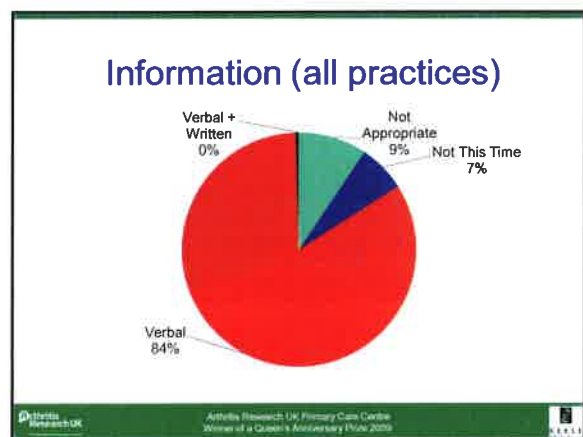
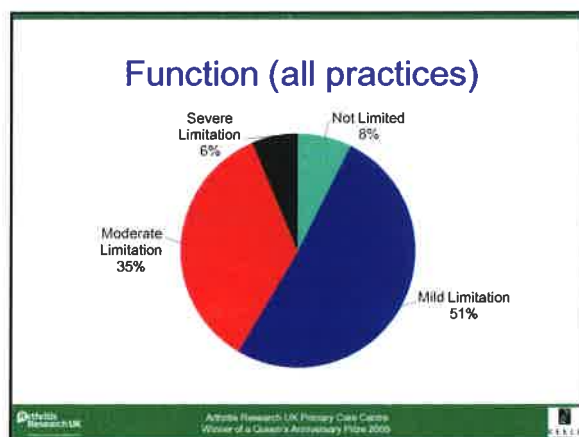
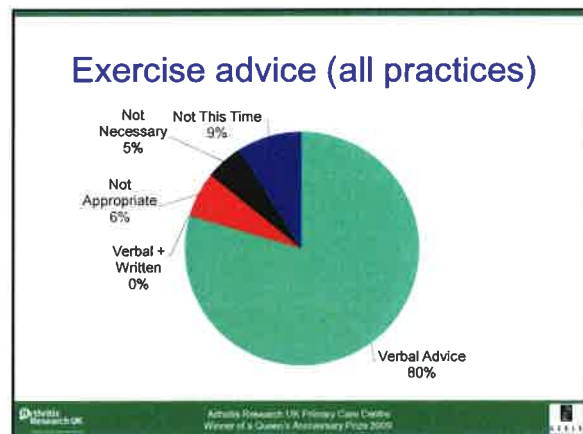
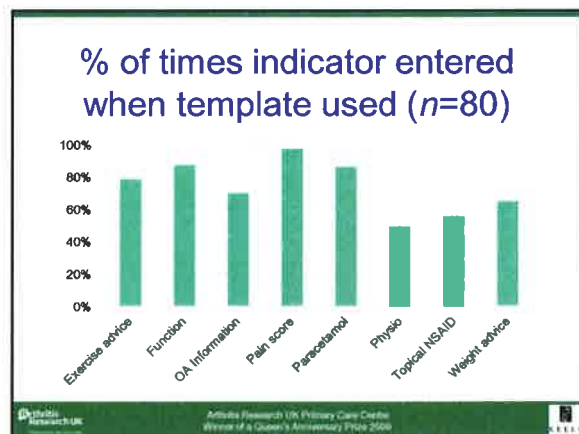
## Trinity

- Fired 106 times in 4 months (June-Sept)
  - Expected 117
- 74 patients (180/10,000 reg pop)
  - Expected 62
- At least 1 indicator entered: 80/106 (75%)
  - "Escaped" template: 26/106 (25%)
- All 8 indicators entered: 32/106 (30%)
  - Excludes O/E weight and BMI

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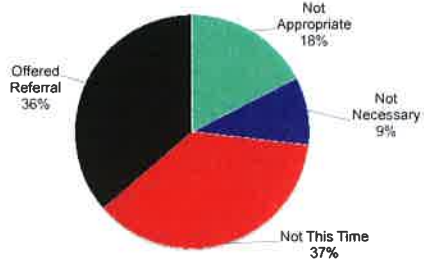
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### Physio referral (all practices)

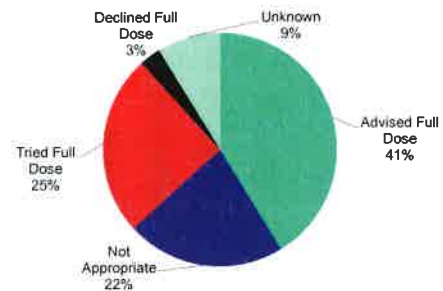


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### Topical NSAIDs (all practices)

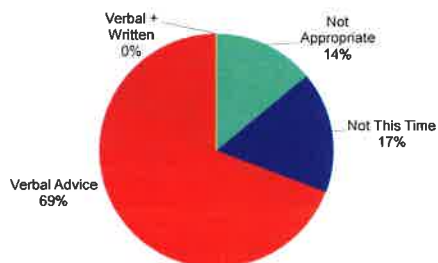


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### Weight advice (all practices)



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### Next steps

- GPs
  - 1<sup>st</sup> video session                      Tues 13<sup>th</sup> Dec (11:30)
  - 1<sup>st</sup> training session                    Tues 10 Jan (12-2:20)
- PNs
  - 1<sup>st</sup> training session                    Tues 10 Jan (12-2:20)
- PHCT
  - 1<sup>st</sup> training session                    Tues 10 Jan (12-1)

#### OTHER DATES IN THE DIARY

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## **Appendix 7.3 Presentation for workshop 1**

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For Higher and Further Education 2009

**Managing Osteoarthritis In Consultations**

**MOSAICS**

Training session 1


## What we are covering

- Mapping OA care
- An OA update
- The new approach

**BREAK**

- GPs and PNs
  - Case histories
  - How to deliver the new approach
  - Outline of training

## Mapping OA



## OA Update


- What is it?
- How common is it?
- How is it being managed now?
- Living with OA
- Beliefs about OA

## What do we mean by OA?

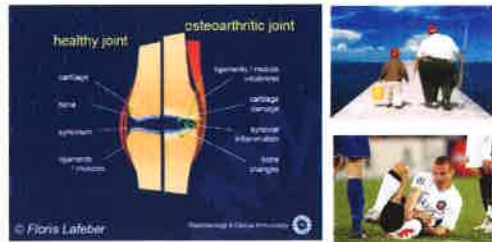


## The underlying problem

### Knee Osteoarthritis



## The underlying problem – complex



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## The underlying problem – modifiable

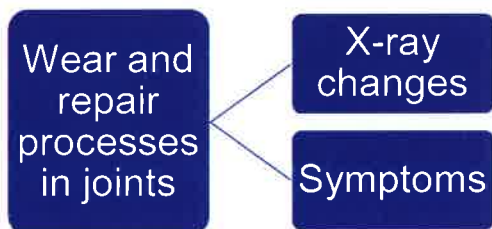


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## The underlying problem



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## How to define? - symptoms / x-rays

1. Symptoms (pain and function) matter to patients
2. X-raying does not add much
  - a) Most older people with joint pain have x-ray changes of OA
  - b) Amount of pain not fully explained by degree of x-ray changes
  - c) As in back pain

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## Defining OA clinically



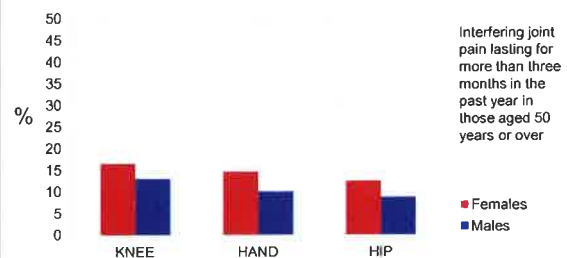
- Persistent joint pain with use (knee, hip, hand)
- Age 45 years and over
- Morning stiffness less than ½ hour
- An alternative diagnosis is unlikely
- X-ray not routinely needed

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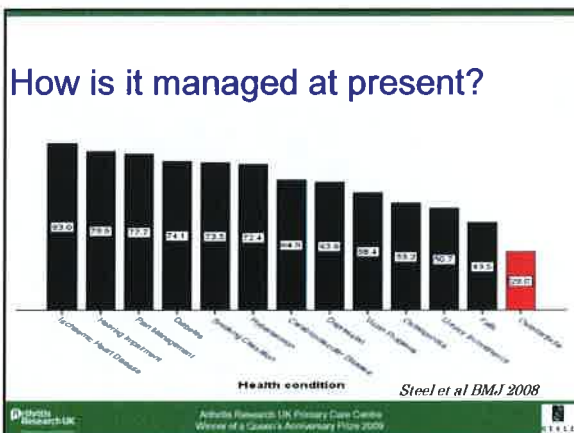
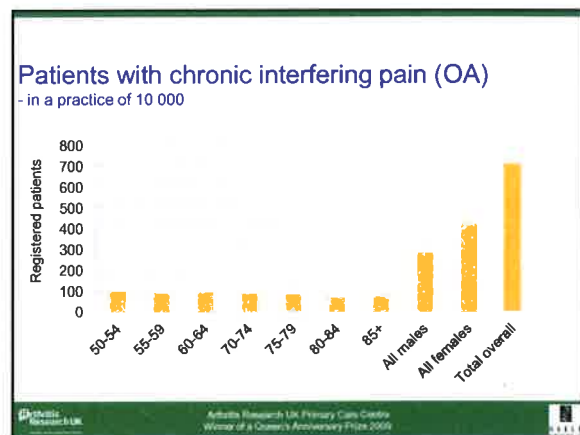
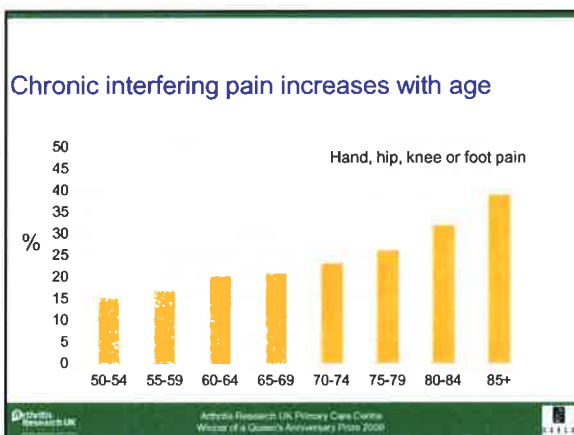
## How common is it? - chronic interfering knee, hand and hip pain



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## ACTIVITIES



*'I've always danced. My wife and I did Ballroom dancing. I struggled at times but then you just go through the pain barrier and try to ignore it.'*

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## Beliefs about OA

All you can do is put up with it

Inevitably progressive  
Just gets worse

Just part of ageing

The only option is a new joint

Are these true?

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## The natural history of OA - example of hip OA

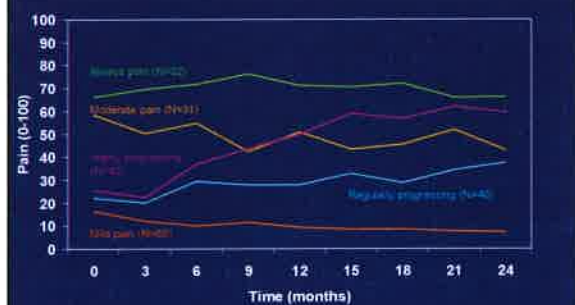
- 222 people consulting with hip OA
- Pain measured on scale of 0 to 100
  - 0 no pain 100 worst possible pain
- 9 measurements in two years

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## Five trajectories of pain in hip OA



## Lessons from the natural history

1. Not progressive for everyone
2. Pain does persist for the majority
3. Level of pain can be significant for some

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## What can we do?

1. Maximise repair process in the joint
  - Reduce load / strengthen tissues
2. Timely refer for joint replacement
3. Give patients strategies for
  - Minimising the impact of pain
  - Improving function / quality of life
4. Provide support for self-management

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Health Foundation  
Co-Creating Health training slide

## Why Self-Management Support?

- Life with a long term condition: the person's perspective
- Interactions with the service: planned or unplanned

NB: People may also be accessing a wide variety of other support e.g. from within their communities

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## The likely benefit?

Increased confidence and skills to self-manage OA

Feel less helpless

Impact of the pain lessened

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## The New Approach

- NICE OA Guideline
- Support for self-management

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## Evidence-based treatments for OA

Give out NICE Guideline

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## NICE OA Guideline - treatment

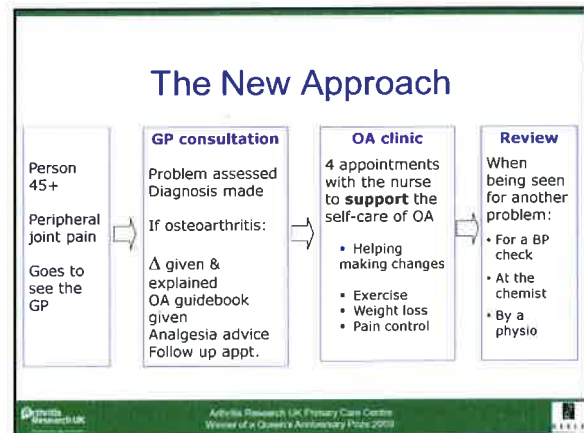
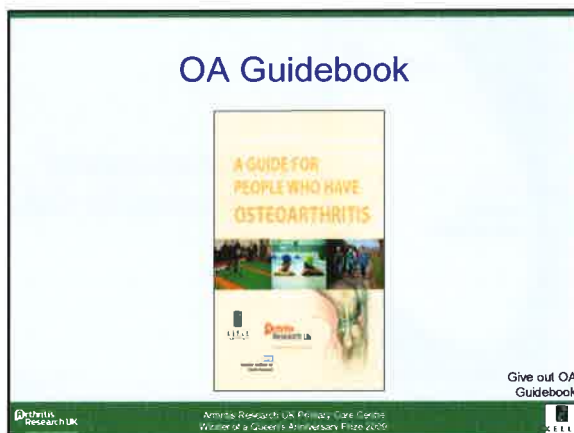
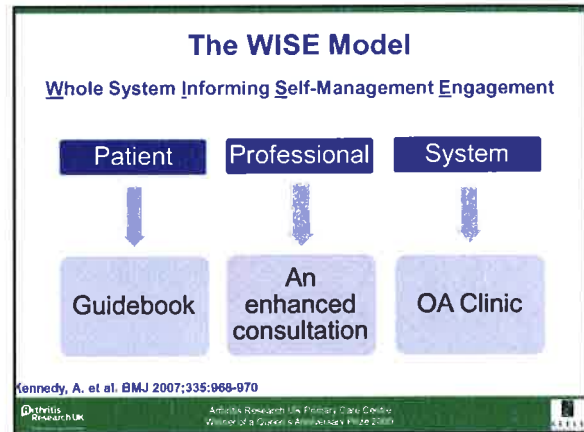
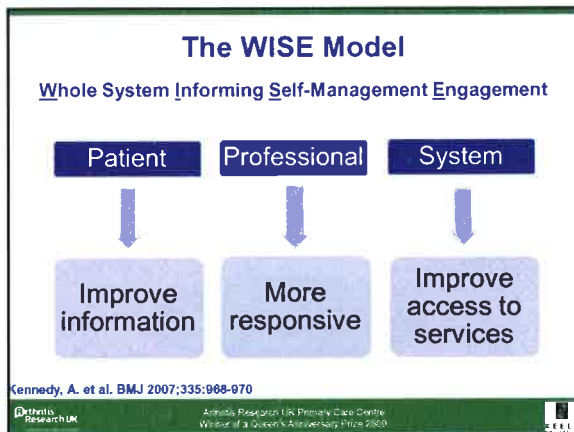
Conaghan et al. BMJ 2008;337:502-3

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## NICE OA Guideline - treatment

Conaghan et al. BMJ 2008;337:502-3

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# BREAK

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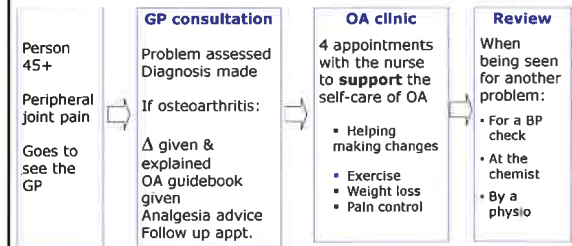
- ### Case histories
- Care that went well
  - Problems with diagnosis, treatment & referral
  - Difficult to manage patients: very elderly & those with co-morbidities
  - What would help you manage OA better?
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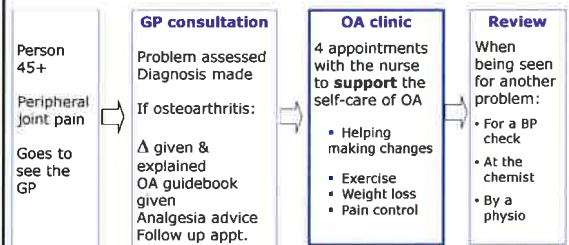
## The study intervention

- New approach
- Enhanced clinical practice
  - Developed in the training
- Standardized - as consistent as possible
  - Between GPs
  - For each patient
  - Over time

## The New Approach



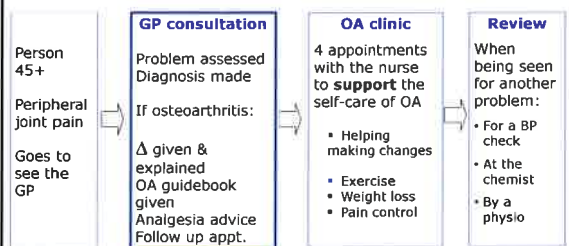
## The New Approach



## Nurse-led OA Clinic training

- 4 days covering knowledge and skills
  - NICE recommendations for OA
  - Joint examination
  - Agenda setting and goal setting
  - Giving advice and explanations
    - OA / exercises / physical activity
    - Weight loss / pain management
  - Use of the OA Guidebook / OA toolbox

## The New Approach



## Consensus exercise

To define the content of the initial consultation between a GP and older person presenting with joint pain

## Results

- 61 possible tasks identified
- Exercise completed by:
  - 13 GPs
  - 14 Lay participants
- 16 Priority tasks

## GP Consultation

1. Make, give and explain the diagnosis
2. Provide analgesia advice / prescription
3. Promote and support self-management

## Making the diagnosis

- Understanding the problem
  - The story / how life affected
  - ICE / what already tried
- Clinical working diagnosis
  - Typical OA history (examination)
  - Red flags / alternative diagnosis unlikely

## Giving & explaining the diagnosis

- Giving
  - Tailored to patient's ideas / concerns
- Explaining
  - Tailored to ideas / knowledge / concerns

## Address expectations (pain relief)

1. NICE recommendations
  - Heat and cold applications
  - Paracetamol and /or topical NSAIDs
  - Adjunct treatments
    - Capsaicin
    - Oral NSAIDs / opioids
    - IA steroids
    - TENS
2. Negotiate a plan (menu of options)

## Promote & support self-management

- Promote
  - Briefly talk about benefits of self-management
- Support
  - Offer the OA Guidebook
  - Offer the OA clinic
  - Make an appt. for the clinic

Give out OA Hands ON  
and MOAC-1 task sheet



## Training sessions 2/3 & homework

- Training
  - Dates / venue Angela to add for each practice
  - Developing the enhanced consultation
    - Simulated patients
  - OA Knowledge Update
- Homework
  - Reflecting on SP consultation & aide-memoire
  - Reading the OA Guidebook

Give out SP video  
DVDs

**THANK YOU VERY MUCH**

## MOAC-1 consensus exercise aim

To define the content of the initial  
consultation between a GP and an older  
adult with peripheral joint pain

## Methods

- Delphi consensus exercise
  - Postal
  - Two rounds
- Two expert groups
  - GPs with an interest in OA
  - Lay participants with experience of OA

## Methods – ideas generation

- List of all possible tasks for MOAC-1
- Expert advisory group
  - Arthritis Care Helpline
  - NICE OA guideline development group
  - Arthritis Research UK National Primary Care Centre

## Methods - scenario

- 57 year old
- 1<sup>st</sup> appointment with their GP about a knee problem
- Problem worsened over past few months
- Asking for help coping with it

## Methods - consensus

- Which tasks should / should not be included
  - Round 1 – "time no object"
  - Round 2 – 10 minute consultation
- Analysis
  - For each group and each task
  - Proportion who would definitely / probably include the task

## Results

- 61 possible tasks identified
- Exercise completed by:
  - 13 GPs (41%)
  - 14 Lay participants (61%)
- Priority tasks (included by all)
  - 11 by all GPs
  - 2 by all lay experts

## Round 2 results – 80% consensus

Level of agreement	GP group	Lay group
100%	11	2
>80%	29	11

## Round 2 results – 80% consensus

Level of agreement	GP group	Lay group
100%	11	2
>80%	29	11

Assessment	GP	Lay
Account of the problem / reason for coming today	✓	79%
How long / whether comes & goes?	93%	✓
Amount / type of pain	✓	79%
Other symptoms - locking and giving way	93%	✓
How activities (work, hobbies, sports) affected?	✓	50%
What tried / how used / how effective?	✓	✓
Examines knee joint / surrounding tissues	✓	✓

Diagnosis and explanation.	GP	Lay
Gives the diagnosis / reason(s) for coming to this diagnosis	✓	✓
Brief explanation of OA	93%	✓
Any unanswered questions?	✓	57%
Promotes self-care for OA	87%	✓
Explains the purpose of managing OA	60%	✓

Management and closing	GP	Lay
Need for painkillers?	✓	✓
Recommends paracetamol and/or topical NSAIDs before other painkillers	✓	✓
Follow-up appointment with the practice nurse	✓	✓
Records and codes the consultation	✓	77%

## Results – which tasks not included

- Use of pain rating scale
- Assessment of mood
- Examination of other joints
- Plotting the patient's BMI
- Consideration of:
  - Other treatments
  - Referral to physio, OT, podiatry, etc



## **Appendix 7.4 Field notes from workshop two (practices A and B)**

Notes from MOAC-1 training session 2 GPs from practices A and B

General introductions

MP - going to reflect on DVD - only one GP had looked at DVD

VC - OK let's reflect on memory of DVD

Then went through the elements of MOAC-1

Making the diagnosis - MP - who happy to make a diagnosis of OA, some but some felt needed an X-ray and at the stage symptom diagnosis such as arthralgia

Language to use, most wear and tear, discussion around when can use OA and when wear and tear, I pointed out the dilemma we had that it is the NICE OA guideline we are implementing and we have an OA Guidebook. Started to get into to the conversation about not just the label but the explanation. VC made the analogy to asthma and the wheezy child and confidence about making the diagnosis – needed to change doctors' and patients' mindsets and approaches before progress in management and outcomes could occur.

Giving the diagnosis, all dealt with in above

What do patients understand by wear and tear, MP to get Drew's slide on this

JH did not like the term wear and repair but did like adding but there are things that can be done to repair the wear and tear

Explaining the diagnosis, how to sell MOAC-1 to the patient, JH need to say something can be done. MP handed out the Lorna patter. Reaction against this and wanted to be more positive and not do the what it is not patter.

General feeling that "Wear and tear" is a comfortable, useful and non-threatening term for patients and that "wear and repair" doesn't really make sense – "ok its worn so who will repair it" (car analogy used). Suggestion was use "wear and tear" but add explanation that repair and functional improvement are possible.

Comments on differences in GP approach – degree of certainty expressed and approach based on prior knowledge of patient, established relationship or not.

GP approach also tailored to patient – location, education, social class and ethnicity

This session lasted about an hour and by the end had agreed to:

To try out giving the diagnosis and explaining the diagnosis

Further discuss how to make the diagnosis in session three, especially how to make the diagnosis of RA

Patient advice handbook too big and not likely to be read by many of their patients

TEN MINUTE BREAK

VC introduced how the SP session would go

Mary character D used

Started from the assumption that the diagnosis of OA given

Random number table to decide who goes first

All bar one had a go, several volunteering

Approaches tried out

From the hex etc I think the most likely problem is OA

Asking what the patient knows about OA

Flipping wear and tear to wear and repair

Trying out saying that other tissues involved and strengthening muscles and ligaments can help

All quite quickly moved to saying that nurse can help with helping with exercise and coping with the problem and mentioned the guidebook

*What was the point Janice tried out?? – Clearing up confusion in patient's mind over "bones worn out" – explanation that bones are fine and it is joint surfaces etc. Helping to overcome barrier to exercise*

Mxxx tried out how to get the patient to agree that an X-ray not needed and ended up with a lot of resistance (asked for in the SP)

MP tried this with eliciting expectation of an X-ray first and tried the mismatch approach and the most people have X-ray changes, and did not convince the patient. Agreed that it is the GPs job to make sure the patient is happy with the diagnosis and this may include X-raying. Important that this is sorted before MOAC-2 as this will undermine the MOAC-2 approach

General agreement that preserving/developing the patient relationship is key to progress so agreeing to an X-ray is trivial and not worth the battle

GPs often have to overcome a credibility gap which consultants do not and an X-ray may be part of this. Patients may be advised at A/E and by others to "see your GP and get an X-ray"

Guidance handouts by radiologists helped GPs to reduce X-ray requests in back pain and may be useful here too

GPs valued small chunks of research evidence that they could use in consultations: e.g. poor correlation between radiology, symptoms and prognosis; benefit of exercise. Patients may suspect GPs are trying to save money with new approach (SP comment)

Progress achieved through session:

1. More prepared to make and give OA diagnosis
2. Several good examples of elicit/provide/elicit approach and real engagement with patient's needs, understanding and expectations
3. Repair concept addressed in different ways
4. Explanation of OA, relationship to muscles and ligaments given and used as basis for recommending MOAC-2 approach

SPV-2 task to practise what they had learnt in giving and explaining the diagnosis with eliciting patient ideas are ideas and expectations on diagnosis and OA

A very positive two hours, split in to two one hour sessions, ideas session and SP session, lots of positive engagement, laughter and all went very well

How about an email reminder to each doctor to review 1<sup>st</sup> and 2<sup>nd</sup> videos before next session?

### **Suggestion for another angle to report findings:**

This seems to be a "first" in terms of intensive, highly focused educational input at practice level to support implementation of a NICE guideline dealing with a major morbidity. Direct contact between senior researchers and clinicians and mainstream GPs is an effective way of testing feasibility as well as helping with implementation – a two-way channel is opened and may lead to change in approach as well as developing a group of enthusiastic early implementers. This model is used in industry and commerce but is rare in the "top-down" NHS approach for guidelines. I am sure we could make a lot of this as a general issue, not just OA.



## Appendix 7.5 Field notes from workshop two (practice C)

Notes from MOAC-1 training session 2 at practice C20-2-12 PM and evening sessions  
PM session

Started with recap on MOAC-1 tasks and reflections on watching DVD – few had watched the DVD, went through making, giving, explaining the diagnosis and offering the guidebook and clinic  
No issues about needing to x-ray to label as OA. Not comfortable with “repair”

Went through what would happen in MOAC-2 – GPs having site of the SMART tool and resource folder would be appreciated – take to training session 3

Quickly decided to try out giving and explaining the diagnosis and selling the guidebook and the clinic

Good at asking ideas about problem and diagnosis

Wear tear and repair provoked puzzlement in SP – also flare and repair floated

SP – bones are wearing out – saying not bones but joints – issue of saying not OP

Good explanations going quite quickly to saying can treat – for example not wear and tear, whole joint involved, affects treatment, so into muscle strengthening

Also – working together – exercise can be a good thing, worry re exercise (hurt = harm), good evidence that exercise helps and does not harm

Comment – cant show OA – hence perhaps the need for an x-ray – *how might we show OA ???? – need to think about this*

Offering the guidebook – “explains about the service” but does not – *but do we need something that does explain the service ?????*

In general GPs had not read the Guidebook nor looked at the DVD – why was this – do they need a task which requires them to do this – but also did not bring case histories – so Chris is right – GPs do not do homework (so leave out in control practice training)

Action points for me

- Get GPs to write their OA patter after have been consulting for a bit – *comment from Vince in car home that better to get this from SPV2/3/4*
- On the aide-memoire include outline of MOAC-2 – explains the service
- Danebridge training session three – get them to open the GB with the patient
- Why did they not read the GB or look at the DVD – need to ask at sometime
- Chan needs to keep a record of who did what of the SP sessions – if different to what was originally intended

Evening session

Altered format

1. MP - Overview of objectives for MOAC-1/2 – support for self-management and implementing the NICE core treatments
2. VC - Brainstorming flow of MOAC-1 consultation and then handed out the aide-memoire v1
3. MP - Reflection on SPV1
4. VC – intro to SP work
5. VC – practising the task

Flip chart notes from brainstorming session

- Why there – affect on life
- Expectations – of GP and pt
- Make the diagnosis – exclusions – share the diagnosis – reasons and explanations
- What are they doing
- Understanding
- Examination
- Worries / beliefs / barriers / hidden agenda
- See nurse / handbook to read

*Note to me - can SPV be substituted with reflection on own practice (as most had not viewed the DVD, but they could remember the SPV consultation well) but not sure how many would remember a real OA consultation*

The approach to OA and the consultation very different in this practice (a training practice) to that in practices A and B – less x-ray orientated / all tuned in to NICE

“repair” not going down well with the GPs – one GP did not like sound bites  
x-rays came up in the context of resisting patients requests for them – but agreed may need to x-ray so patient is comfortable with OA diagnosis (as in practices A and B training)  
*note to me – the nurses will need to have the patter about not x-raying and back up the GP*  
example of an OA explanation – life long use > wear and tear > flare > can settle down > need to have stronger muscles (to help the joint run true)  
Added comment from Vince: The only thing I would add for the evaluation and eventual write-up is the comment from Fxxxx, with which others agreed, that we provided a unique opportunity for the GPs to see and comment on the content and style of each other's consulting - this is very positive feedback in that we provided a special opportunity for professional development, beyond the focus of the project.

## **Appendix 7.6 Quick reference guide to the NICE 2008 OA Guideline**



## Key priorities for implementation

- Exercise<sup>1</sup> should be a core treatment for people with osteoarthritis, irrespective of age, comorbidity, pain severity or disability. Exercise should include:
  - local muscle strengthening, and
  - general aerobic fitness.
- Referral for arthroscopic lavage and debridement<sup>2</sup> should not be offered as part of treatment for osteoarthritis, unless the person has knee osteoarthritis with a clear history of mechanical locking (not gelling, ‘giving way’ or X-ray evidence of loose bodies).
- Healthcare professionals should consider offering paracetamol for pain relief in addition to core treatment; regular dosing may be required. Paracetamol and/or topical non-steroidal anti-inflammatory drugs (NSAIDs) should be considered ahead of oral NSAIDs, cyclo-oxygenase 2 (COX-2) inhibitors or opioids.
- Healthcare professionals should consider offering topical NSAIDs for pain relief in addition to core treatment for people with knee or hand osteoarthritis. Topical NSAIDs and/or paracetamol should be considered ahead of oral NSAIDs, COX-2 inhibitors or opioids.
- When offering treatment with an oral NSAID/COX-2 inhibitor, the first choice should be either a standard NSAID or a COX-2 inhibitor (other than etoricoxib 60 mg). In either case, these should be co-prescribed with a proton pump inhibitor (PPI), choosing the one with the lowest acquisition cost.
- Referral for joint replacement surgery should be considered for people with osteoarthritis who experience joint symptoms (pain, stiffness and reduced function) that have a substantial impact on their quality of life and are refractory to non-surgical treatment. Referral should be made before there is prolonged and established functional limitation and severe pain.

<sup>1</sup> It has not been specified whether exercise should be provided by the NHS or whether the healthcare professional should provide advice and encouragement to the patient to obtain and carry out the intervention themselves. Exercise has been found to be beneficial but the clinician needs to make a judgement in each case on how to effectively ensure patient participation. This will depend upon the patient’s individual needs, circumstances, self-motivation and the availability of local facilities.

<sup>2</sup> This recommendation is a refinement of the indication in ‘Arthroscopic knee washout, with or without debridement, for the treatment of osteoarthritis’ (NICE interventional procedure guidance 230). This guideline has reviewed the clinical and cost-effectiveness evidence, which has led to this more specific recommendation on the indication for which arthroscopic lavage and debridement is judged to be clinically and cost effective.

About this booklet

This is a quick reference guide that summarises the recommendations NICE has made to the NHS in Osteoarthritis: the care and management of osteoarthritis in adults (NICE clinical guideline 59).

This guidance is written in the following context

NICE clinical guidelines are recommendations about the treatment and care of people with specific diseases and conditions in the NHS in England and Wales.

This guidance represents the view of the Institute, which was arrived at after careful consideration of the evidence available. Healthcare professionals are expected to take it fully into account when exercising their clinical judgement. The guidance does not, however, override the individual responsibility of healthcare professionals to make decisions appropriate to the circumstances of the individual patient, in consultation with the patient and/or guardian or carer, and informed by the summary of product characteristics of any drugs they are considering.

## Implementation tools

- NICE has developed tools to help organisations implement this guidance (listed below). These are available on our website ([www.nice.org.uk/CG059](http://www.nice.org.uk/CG059)).
- Slides highlighting key messages for local discussion.
  - Audit support for monitoring local practice.
  - Costing tools:
    - costing report to estimate the national savings and costs associated with implementation
    - costing template to estimate the local costs and savings involved.

## Further information

- Ordering information
- You can download the following documents from [www.nice.org.uk/CG059](http://www.nice.org.uk/CG059)
- A quick reference guide (this document) – a summary of the recommendations for healthcare professionals.
  - The NICE guideline – all the recommendations.
  - ‘Understanding NICE guidance’ – information for patients and carers.
  - The full guideline – all the recommendations, details of how they were developed, and reviews of the evidence they were based on.
- For printed copies of the quick reference guide or ‘Understanding NICE guidance’, phone NICE publications on 0845 003 7783 or email [publications@nice.org.uk](mailto:publications@nice.org.uk) and quote:
- N1459 (quick reference guide)
  - N1460 (‘Understanding NICE guidance’).

Related NICE guidance

For information about NICE guidance that has been issued or is in development, see the website ([www.nice.org.uk](http://www.nice.org.uk)).

Published

NICE has issued clinical guidelines on obesity (CG43) and depression (CG23); technology appraisal guidance on ‘Guidance on the use of cyclo-oxygenase (Cox) II selective inhibitors, celecoxib, rofecoxib, meloxicam and etodolac for osteoarthritis and rheumatoid arthritis’ (TA27); and interventional procedure guidance on ‘Arthroscopic knee washout, with or without debridement, for the treatment of osteoarthritis’ (IPG230), ‘Single mini-incision hip replacement’ (IPG152), ‘Mini-incision surgery for total knee replacement’ (IPG117), ‘Minimally invasive two-incision surgery for total hip replacement’ (IPG112), and ‘Artificial trapeziometacarpal joint replacement for end-stage osteoarthritis’ (IPG111).

Updating the guideline

This guideline will be updated as needed, and information about the progress of any update will be posted on the NICE website ([www.nice.org.uk/CG059](http://www.nice.org.uk/CG059)).

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## Quick reference guide

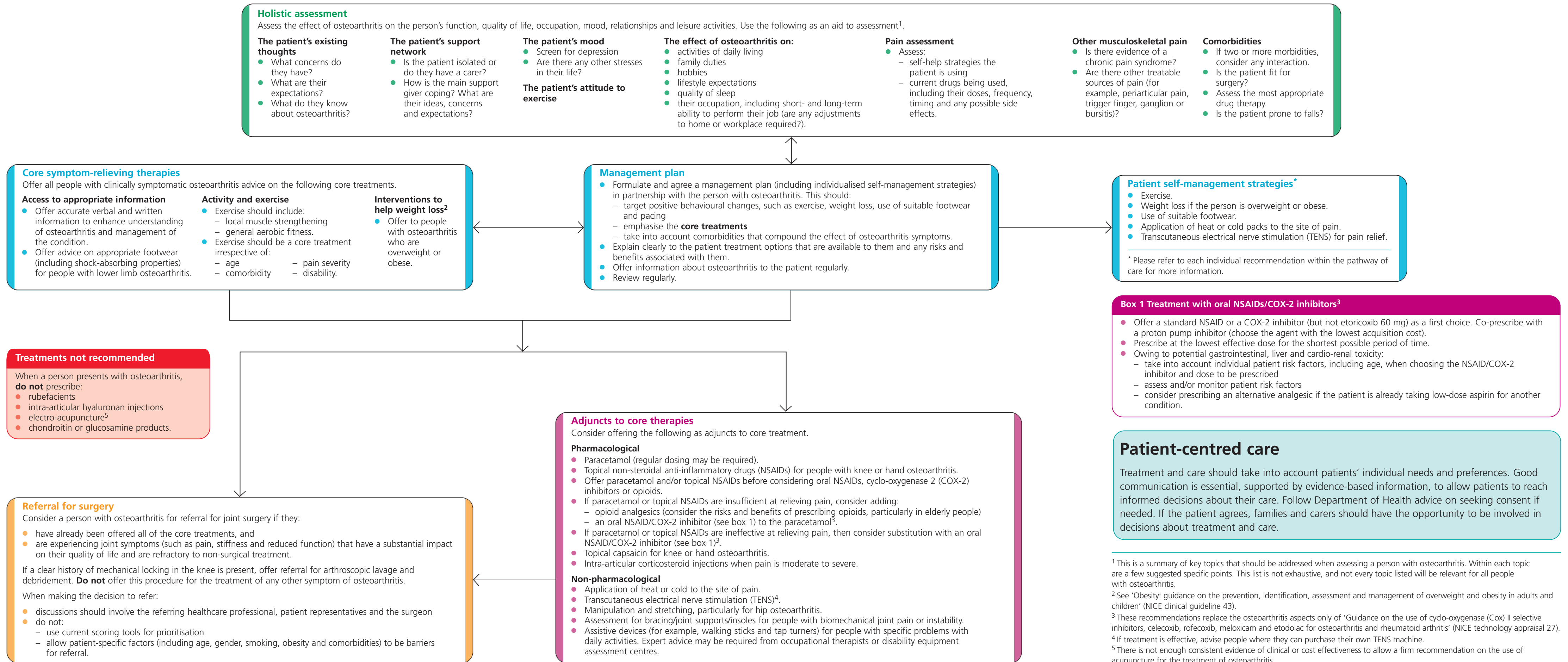
Issue date: February 2008

## Osteoarthritis

The care and management of osteoarthritis in adults



# Assessment, management and treatment of osteoarthritis in adults



## **Appendix 7.7 The Keele Guidebook for people with osteoarthritis**



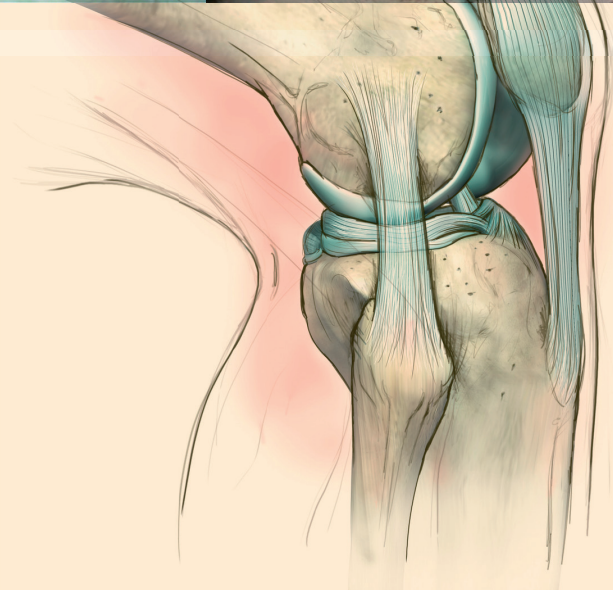
# A GUIDE FOR PEOPLE WHO HAVE OSTEOARTHRITIS



Keele  
University

**Arthritis**  
**Research UK**

Providing answers today and tomorrow



# A guide for people who have osteoarthritis



Keele  
University



Providing answers today and tomorrow

Arthritis Research UK  
Primary Care Centre





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## Introduction

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Arthritis is a group of conditions which involve damage to one or more joints in the body. There are more than a hundred types. The two main ones are rheumatoid arthritis and osteoarthritis. Rheumatoid arthritis is a disease of the immune system, which can affect children as well as adults. It can progress very rapidly causing swelling and damage to the joints, and can affect the whole body including internal organs.

Osteoarthritis (OA) is different from rheumatoid arthritis. OA is the most common form of arthritis. It is mainly found in the knee, hip, hand, spine and foot joints of people after their mid forties. The most common symptoms are pain and stiffness. This guidebook concerns OA.

Quite often in people who have joint pain, an X ray of the problem joint does not show signs of any damage. The opposite is also true. Many people, who have joints which show X-ray signs of OA, do not experience any pain. So, it can be difficult to decide where joint pain ends and OA begins. Because of this, doctors often use the term 'chronic joint pain in older people', or 'joint pain' for short, rather than OA. In this guidebook both the terms 'joint pain' and OA will be used, and will mean the same thing.

The information in the guidebook comes from different sources. Some of it comes from health care research, some from those who treat and care for people with joint pain, some from people who have OA and some from guidelines produced by the Department of Health.

All the comments in italics are what people have told researchers about their experience of having OA type joint pain. Reading about their experiences may help you. For example, it may make you feel more confident to try out different ways of managing your symptoms, or reassure you that others have had similar experiences to you. People's circumstances vary enormously and it may be that you will identify more with some individual experiences than with others.

By drawing on both the knowledge of patients and health care professionals, we hope that you will be able to understand the reasoning behind the advice that is given in this guidebook. We also hope that you will see how you can adapt the advice to fit into your way of life.



*Peter Croft*  
*Director and Professor of Primary Care Epidemiology*  
*Arthritis Research Campaign National Primary Care Centre*  
*June 2009*



# Chapter 1 - Personal experiences of joint pain

This chapter describes OA from the point of view of people who have it.

## ■ Experiencing symptoms

Joint pain and stiffness are very common in people after middle age. While pain usually goes away with rest, stiffness may get worse. Some people's symptoms start so very gradually that they find it difficult to pinpoint precisely when their problem began. Others find the symptoms start quite suddenly, perhaps after an accident such as a fall.

*"What I think started it off, I tripped over, somebody had left a filing drawer open and I tripped over it, from then on I had this pain. I went to the doctor and he said, 'You've got the start of arthritis in your knee.'"*

Quite often the symptoms come and go rather than always being present. This is quite common in the early stages when there may be a mild problem for a while, which then goes. Even later on the symptoms may come and go. People usually come to understand the kinds of things that trigger them.

*"If there's a change in the weather, if I do too much or more than usual shall we say, sometimes if I just put too much pressure on a joint it'll start it up."*

Nevertheless, people say they can be taken unawares.

*"I pick the cup up as normal, but it might just 'go', that part of the hand. It annoys me, but it doesn't stop me."*

Many older people, while they recognise that not everyone has OA in later life, tend to accept joint pain as part of growing older.

*"I think aches and pains are one of those kind of things; I'm getting older...I suppose, in a way, I'm supposed to expect this kind of thing to happen."*





This is particularly so if they had a job that has involved putting a lot of stress on their joints.

*"I worked in the motor trade all my life. So I mean from the age of sixteen, seventeen they (joints) were hauling and lifting – lifting wheels, lifting gear boxes, straining"*

Those people who start with symptoms earlier in life, in their forties for example, do not necessarily accept joint pain as being natural for their time of life.

*"I went to the doctors a few times with knee pain when I was in my late forties. They sent me for an X-ray and the doctor said it was osteoarthritis, wear and tear, in keeping with my age. I was shocked. I thought this was what old people got. I felt like I'd got old quickly."*

---

### ■ **Coping with joint pain and stiffness**

Pain and stiffness in a joint can make life difficult when people find they cannot do the everyday tasks they need to do or are used to doing. When the symptoms are in the leg, climbing stairs or getting in and out of a car may become a problem. OA in the hand can make it difficult to grip things, or to make fine movements such as doing up buttons. However, people who have joint pain often find a way round their difficulties and learn different ways of doing jobs.

*"Well, if I'm doing something on the ground, I use a couple of pads-- always got something as cushioning. But I find that I have to keep moving. It does go stiff and painful when I'm actually kneeling-down on my knees and I'll have to keep changing the position that I'm in."*



People with OA also speak of their need to mentally adjust their approach to doing things.

*"Instead of doing everything at 100 miles an hour like I used to do, I just take my time now, and sit down and think, 'There's always tomorrow'. Whereas before, I used to think, 'Well, there's no tomorrow. I want it done today.' And you have to adjust yourself and change your way of life, don't you?"*

Some people, patients and health professionals, refer to doing everyday activities in stages rather than all at once as pacing. Similarly, when a joint is painful, people said they needed to find their own balance between rest and activity until it was feeling better.

*"Aches, and pains, they may go after a few days, if you just give your joint a rest and just give it a gentle massage and walk about with it. And I think over the period you're using it, you're getting it right; you're keeping it active; you're going as far as you can."*

However, for people who are in employment, or responsible for caring for others, it is not always possible to pace activities.

*"I was caring for my wife and you've got to get on with it, keep going. You've got to, there's no other way. So, all these things may have been contributing to my joint problem; carrying weights, carrying on looking after my wife, when I really should have been seeking a bit more help myself perhaps."*

## ■ Keeping independent

Nearly everyone who has joint pain feels that it is most important for them to keep as independent as possible.

*"I have done everything for myself you know. I have said to my children I don't want any assistance unless I can't do it for myself."*

Sometimes people hide or downplay the difficulties that their joint causes them, often because they do not want to be seen as complaining or disabled and in need of help.

*"I can live with the discomfort, I can live with the pain; but what I don't like is sometimes I limp and people say, 'Ooh! Have you hurt your leg?' It's not vanity – it's part of the image you have to portray in business."*

*"Aches, and pains, they may go after a few days,..."*

*"... I really should have been seeking a bit more help myself perhaps."*

---

## ■ The future

Some become apprehensive about what their future holds. This may happen when painful joints start at a relatively young age, or if people have experience of a family member or friend becoming disabled through arthritis.

*"My mother was very much the same and she was in a wheel chair at the end of her life. That worries me a bit. If I'm like this now, what am I going to be like in another ten years?"*

Many, though, do not expect to become disabled as a result of OA since their symptoms level out or even improve.

*"Latterly it's improved. The only thing I have now with my knee is a twinge now and again where I say, 'Ooh, I shall have to be careful.'"*

A change of occupation or retirement may result in the symptoms easing off altogether.

*"My hands were very badly affected, but since I've retired and not doing the manual part of nursing, you know, the humping and that, they seem to have improved and I can now knit again."*

---

## ■ Consulting the doctor

It is quite common for people with a joint problem to decide not to consult a doctor. They may believe that there is little that can be done about it and that they do not want to waste their doctor's time. Amongst those who do consult, some say they are told that their problem is just 'wear and tear'.

*"With the doctor telling me it was, sort of 'wear and tear,' that meant he couldn't do anything, I suppose. But I don't know whether they can or not."*

When this happens patients may think that their doctor is telling them that they have to accept that joint pain is inevitable in later life and that there is nothing a doctor can do. This can make some people reluctant to consult their doctor for a second time about a joint problem.

Some patients believe that painkillers are the main treatment offered by doctors.

*"I haven't been to the doctor's about it because I can't see any point because they can't operate and all they'll say is, 'We'll give you some more tablets.'"*

In practice many people try to limit the number of painkillers they take and they may combine tablet and non-tablet ways of managing their symptoms.

*"I swear by my TENS machine, my pain killers and my heat pads."*

Some people have other health problems as well as OA and they have to take these into account when managing their joint problem. When these include other joint or muscle conditions, it can be difficult to know whether it is OA or a different problem which is causing their symptoms.

*"I could say, 'Oh well, if the pain's due to the arthritis perhaps I could go swimming because I think that may help me. But, I can't go dancing. It's a wonderful thing for osteoporosis, but it's no good for my back problem, because I can't jump or jar it.'"*

In this situation patients want reassurance that what they do for OA is also helpful for any other condition they have and vice versa.

## ■ **The importance of keeping going**

Whatever people's circumstances, one message that came out clearly from conversations with people who have joint pain is how important it is to stay as active as possible.

*"And my daughter-in-law's auntie has got arthritis. They told her she'd got arthritis, and she just sat and she's now in a wheel chair. She stiffened up everywhere. I'm not going to do that. I think exercise is the best thing for you. Keep going!"*

*"I want to be as active as possible for as long as possible and I am quite happy to exercise even if it's a bit uncomfortable you know. I don't totally go along with the no pain - no gain thing, but equally you can't expect to just wave a magic wand and it will disappear. So it would be nice to know what could be done, apart from medication, that could be beneficial and not harmful"*



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There are many things that people who have OA can do to stay active and independent, and these will be discussed in chapters 4 and 5. The next chapter will look at OA from a more medical perspective so that the reasoning behind the advice becomes clear.

### ■ *Things to remember*

1. While joint pain and stiffness can make life difficult, people usually find a way around their difficulties and maintain their independence.
2. Some people believe that OA is something that they just have to put up with, and that there is nothing that can be done. However, as you read on you will see that this is not the case.
3. If you have medical problems in addition to OA, you may need extra guidance and reassurance that what you do to manage one health condition does not make another worse.
4. Many people with joint pain say they have found out from experience the importance of keeping physically active.



## Chapter 2 - Understanding OA and joint pain as a diagnosis

### ■ *What is OA?*

OA has been identified in skeletons of humans and animals that lived hundreds of years ago. Any of the joints in the body can be affected, though it is most common in the hands, knees, hips and spine. Quite a lot of research has been done into knee pain, but much less on other joints such as those in the hands or feet, for example. Medical understanding about the nature of OA is changing. In the past it was thought to be the result of thinning and loss of cartilage. (Cartilage covers the ends of the bones in the joints allowing the bones to slide over one another.) But now OA is thought to be a disease that affects the whole joint, and not just the cartilage.

Joint pain is more common amongst people in certain occupations. For example, OA of the hip is more common amongst farmers. This suggests that the way a joint is used over a long period of time is a factor in the development of OA. But it is not correct to think of OA as simply being the result of 'wear and tear', that is, the wearing away of a joint through use. A living joint is not the same as a moving part in a machine. A joint in the body can repair itself. 'Wear and repair' is a more apt phrase than 'wear and tear'. It is the repair process itself that can cause a problem when, for example, in trying to repair a joint the bone overgrows. In the hands bony nodules (formed when bone overgrows) can often be seen on finger joints. So, OA can be thought of as the process by which the joint tries to repair itself that can then lead to problems.

### ■ *Why do doctors sometimes diagnose joint pain and other times osteoarthritis?*

It is very common for older people to have changes to their joints which are typical of OA. Most people over 55 years of age have X-ray evidence of hand OA, for example. But, only around one in five of them experience any symptoms. Similarly, the X-rays of people who reported pain in their knees showed that about a third of them had no signs of OA changes to the joint. So there is an incomplete match between symptoms of pain and X-ray evidence of joint dam-

age. Because it can be difficult to decide where joint pain ends and OA begins, doctors may talk about joint pain rather than OA.

Although most joint pain in older people is due to OA, there are some other causes. Once these have been ruled out, it is treated the same, whether the doctor calls it OA or joint pain.

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### ■ ***What causes OA/joint pain and what makes it worse?***

In some cases the condition is inherited, though the specific genes involved have not been identified. Apart from genetic make up, there are four factors that can make people more vulnerable to developing joint pain:

1. Some medical conditions that people have, such as childhood hip disorders, or rheumatoid arthritis, which damage joints.
2. Injury to a joint, either through an accident or as a result of surgery.
3. The types of job or sports that people do, or have done in the past.
4. Being overweight in the case of knee pain, and possibly also for hip and for hand pain.

For people who have joints in which there are changes indicating OA, there are things that seem to increase the risk of the joint damage getting worse. This can happen in knee OA, for example, if the joint is injured, or is out of line, or if the muscles above the knee are weak. Doctors think that increased pressure on the joint, through being overweight or through injury, may increase both the likelihood of developing knee OA and speeding up its progression.

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### ■ ***Does OA get worse and worse over time?***

Although a great many people have some mild joint damage, very few will progress to the point where there is severe damage of the joints, and serious disability. This is because the repair process (remember that OA is the process by which the joint tries to repair itself) often successfully limits the damage. Even so, it is difficult to predict whether an individual person will be in the minority of those who have OA which gets worse, or in the vast majority where it does not.

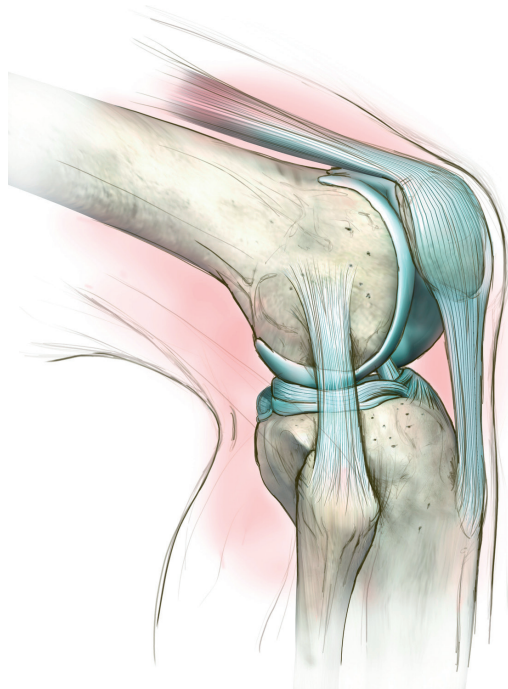
People can go through a phase where joints are painful, followed by one where the pain eases off. This can happen in the hand when

a person may have tender finger nodules and painful finger joints that are very uncomfortable for a few months, followed by a spell when the discomfort settles down. Some people find that damp cold weather can trigger their symptoms. The weather, though, does not cause damage to joints.

Very heavy physical activity, such as that found in some types of sport like football or in certain occupations like the building trade, can be a factor in causing joint pain in later life, but a lack of physical activity is also bad for joints. Not using a joint can cause wasting of muscles and weakening of other tissues, and that in turn can increase pain and stiffness. Keeping a joint moving is vital for its health, so long as you do not overdo it.

### ■ ***Things to remember***

1. OA is a condition of the whole joint, not just the cartilage, and is probably the result of the joint trying to repair itself.
2. In the vast majority of people joint pain will not get progressively worse.
3. How painful a joint feels bears little relationship to the amount of joint damage. In other words, severe pain does not necessarily mean severe damage.
4. Joints need to be exercised regularly to keep them healthy.





## Chapter 3 - Seeking professional help

About one in six of all consultations with GPs is for joint or muscle pain. In a one-year period about a half of people aged over 50 have a spell of knee pain, though only one in three of them see their doctor about their problem. Many people who have painful joints do not consult their doctor. There can be several reasons for this. Some think that there is little that their doctor can do or that their problem is not serious enough to warrant a visit to the doctor. Others find their pain comes and goes and when it has gone they forget about it.

*"I should go to the doctors really. If it's paining me, I think I will go to the doctors, but by the time (I come to make an appointment), well its gone off then you see, and I have forgotten all about it."*

If someone has concerns about their condition, or despite doing their usual things to manage the problem it continues to have quite an effect on their life, then it is a good idea to consult a doctor. It is not wasting a doctor's time. You should seek help if you have significant changes to your symptoms, for example if pain worsens and does not respond to your usual remedies, or your joints become hot and swollen, or you feel generally unwell. Most of the time people manage a joint problem by themselves but sometimes they may need to consult their GP. Pharmacists, nurses, physiotherapists, podiatrists (chiropodists) occupational therapists and NHS Direct are other sources of health advice.

### ■ Making a diagnosis



People often go to the doctor first with pain, stiffness and/or restricted movement in a joint. When making a diagnosis doctors look for certain signs and symptoms:

- Joint pain following activity and which gets better with rest
- Short-lived stiffness in the morning or after rest
- Reduced range of movement of the joint
- Bony swelling
- Joints creak or crack on movement – though this can happen naturally in the joints of people who do not have OA

They also check that other symptoms are not present in order to make sure that there is not a more serious diagnosis which may need fast referral for treatment by a specialist. The GP also has to rule out other common reasons for joint pain, such as gout, by taking a careful history and examination. Doctors may say that a patient has 'a touch of arthritis' or an 'arthritis type' joint pain. What this means is that they have ruled out other diagnoses and they are going to treat the joint pain as osteoarthritis.

As we have seen in the previous chapter, not all patients who have OA-type pain and stiffness have changes to their joints which show up on an X-ray, and not all those who have X-ray evidence of joint damage experience pain. However, whether there is X-ray evidence of OA or not, doctors manage this kind of joint pain in the same way. Doctors question the need to routinely do clinical tests to confirm a diagnosis if the tests make no difference to the way they treat the symptoms.

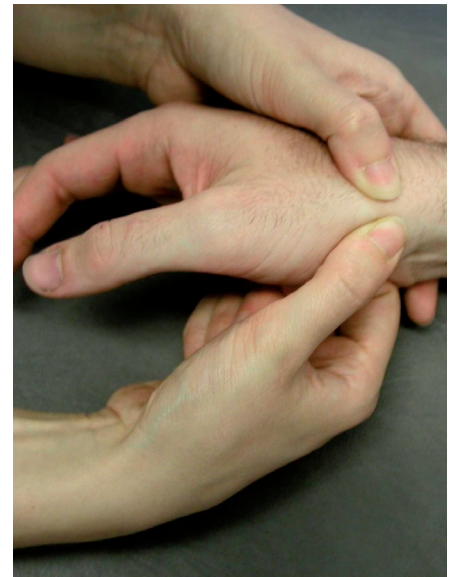
So, X-rays have only a limited role to play in the diagnosis and ongoing care of the vast majority of patients who have OA. GPs request an X-ray of a joint if the results of the X-ray will help decide on a course of treatment. For example, a GP may arrange for an X-ray before referring a patient for joint replacement surgery, to see how much the joint is affected.

### ■ What can the GP do?

Firstly, a GP can diagnose the type of joint pain and decide whether this is an OA-type problem that can be managed within general practice, or something that needs further investigation by a specialist. If it is the former, then a GP can discuss the kinds of things that patients can do to help maintain their independence, prevent their joint problem worsening and manage the pain.

If pain is the main problem, then a GP may prescribe painkillers, but this is not the only way of managing pain. You should also be advised how any other conditions you might have could affect your joint pain and its treatment. Reassurance and advice may be all that you need. If, though, the problem continues or worsens, then you should go back to your doctor to check that OA is still the likely diagnosis, or what other treatment could be offered.

GPs can refer you to other therapists in the primary health care team, such as physiotherapists, occupational therapists (OTs), podiatrists (chiropodists) and dieticians, or to exercise schemes such as exercise on referral. For the small number of people whose joint problems cause severe pain and disability, and do not respond to treatment, the GP can refer the person to specialist care. Specialist



**National Institute for Health and Clinical Excellence (NICE) OA guidance**

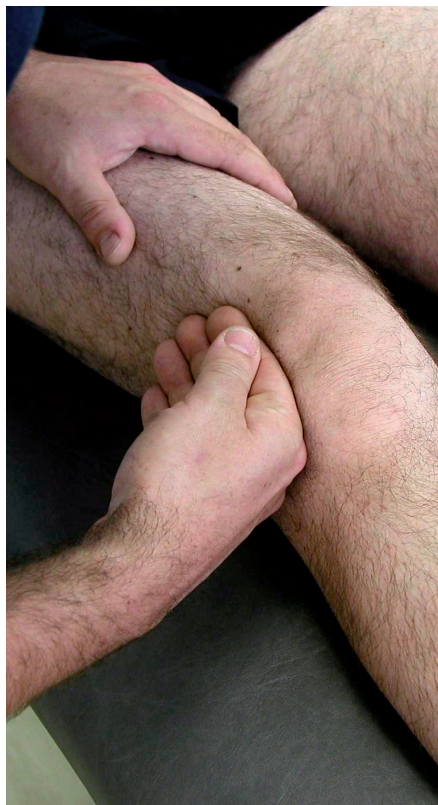
*February 2008*

Your GP should discuss with you the following options as part of a self-management plan.

- Exercise.
- Weight loss if you are overweight.
- Use of suitable footwear.
- Application of heat or cold packs to the skin where it hurts.
- Transcutaneous electrical nerve stimulation (TENS for short) for pain relief.

care includes nurse specialists, physiotherapists or GPs who have a specialist interest in musculoskeletal pain, rheumatologists, orthopaedic surgeons or pain management programmes.

### ■ **Community physiotherapists, practice nurses, OTs, podiatrists and pharmacists**



Physiotherapists are skilled at diagnosing and treating, stiff and painful joints. They have been in short supply in general practice, and after being referred, patients often had to wait a long time to see one. The position is changing. Patients can now refer themselves to a physiotherapist. The physiotherapist is likely to become the first port of call for people who have problems with their joints. In some areas there is also a telephone service called Physio Direct. Patients can be assessed and receive advice over the phone and, if necessary, offered an appointment with a physiotherapist or referred to other services.

Nurses who work at GPs' surgeries also see patients with chronic conditions like joint pain, and can offer support and advice. OTs (occupational therapists) can advise on painful joints in the hand, and podiatrists (chiropodists) on painful joints in the foot. If you want to find out which medicines are best for easing joint pain, then your local pharmacist can help.

If you are in a position to pay for your own treatment, there are a large number of physiotherapists and podiatrists (chiropodists) across the UK offering treatment at private clinics, as well as many who will treat people in their own homes.

### ■ **Things to remember**

1. Most people's joint pain can be managed in general practice.
2. GPs diagnose OA by looking for certain signs and symptoms and ruling out other musculoskeletal conditions.
3. X-rays of joints are not useful in the diagnosing and management of most patients' OA.
4. If symptoms worsen or new ones arise then people should seek medical advice.
5. Apart from GPs there are other health professionals who can give advice about joint pain and its management. Physiotherapists have particular expertise.



## Chapter 4 - Managing and treating joint pain: Examining the essentials

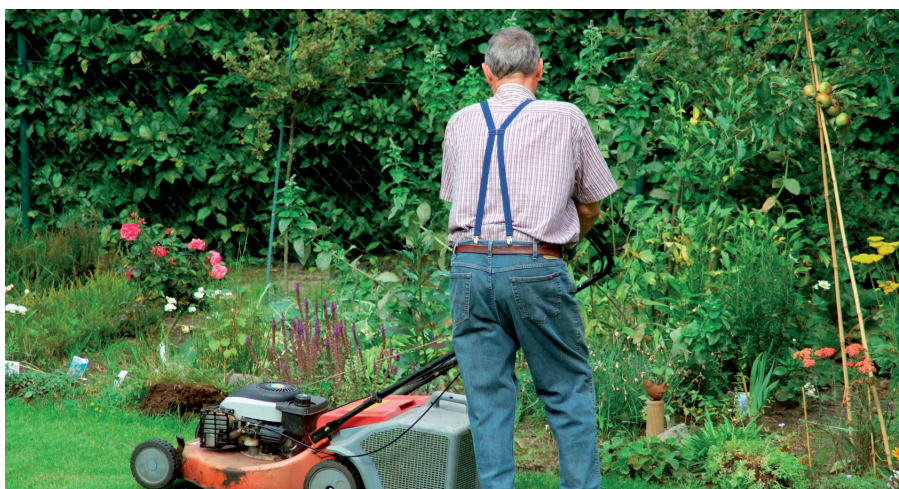
The main concern of most people who have joint pain is to continue to be active, and to be able to do the things they want to do, despite problems with their joints. This chapter will consider basic ways of dealing with the symptoms of OA. You may not think of these as treatments because they are everyday things that you can do for yourself, without the need to see a doctor. The chapter will also look at the evidence as to whether these 'treatments' work.

### ■ 1. Physical activity to ease joint pain and increase mobility

As we saw in the first chapter, people who have OA have found out for themselves how important it is to keep active.

*"One of the ladies in work said that her fingers went stiff and she couldn't bend her fingers. And I said, 'Yeah but the longer you keep them still the worse it is going to get. I find that if I move the pain goes away.' By dinnertime she came across and she said, 'You're right. I've got going and the pain's gone.'"*

Evidence from research confirms the importance of physical activity in helping to relieve pain and stiffness, and keep people independent. (See the Box to right)



**EXTRACTS FROM:** Evidence-based recommendations for the role of exercise in the management of osteoarthritis of the hip or knee – the MOVE consensus

*Drawn up by E. Roddy, W. Zhang, M. Doherty and 17 other health professionals who work in the field of OA. Published in Rheumatology 2005 volume 44 pages 67-73*

Research has shown that amongst people with knee OA, both muscle strengthening and aerobic exercise (physical activity that makes the heart beat faster) can reduce pain and improve the ability to do everyday tasks. Both home based exercises and hydrotherapy (exercising in warm water) are effective. Only a few studies have looked at the value of exercise in relation to OA in other joints.

Experts in OA have concluded that exercise is safe. Experts see both aerobic and muscle strengthening exercise as an essential part of the treatment of every patient with hip or knee OA. There are very few reasons why people with OA would be advised not to do aerobic or muscle strengthening exercises.

Research has shown that group and home-based exercises are equally effective. Patients, though, may have a preference for one over the other. Experts emphasise that it is important to keep up exercise routines in order to continue to get benefit.

Experts think that improving the strength and use of muscles around the knee and hip may play a role in preventing the progression of OA.



© Walking the Way to Health Initiative

### *Which physical activities are suitable?*

Physical activity can be the general sort that causes your heart rate to increase (aerobic exercise) – such as walking, cycling and swimming. Or it can be the sort that works on a particular joint in order to increase the strength of muscles and improve the range of movement, for example, exercises like straightening your knee while sitting in a chair, making a fist or flexing the wrist, moving the head from side to side. Both sorts are beneficial.

Walking, swimming and cycling are good forms of exercise for people with joint pain. Physical activity, particularly that which involves getting out and about with other people, helps not only with joint pain and other health problems, but also with a general feeling of wellbeing.

*"I go to town with a friend who is, she's ninety actually, and we do that. We go and have a coffee. It's just you know have a look round, have a coffee and get the bus home, which is quite nice. So it is just a break, really."*

However, to be of benefit, physical activity has to be ongoing. If it stops, the good work it does, stops too. Sometimes though, it can be hard to stay motivated for all sorts of reasons. People have told researchers about the kinds of things they found help, or hinder, keeping up physically activity.

### *Things that help people to keep physically active:*

- **Doing activities that can be easily incorporated into everyday life.** Walking is probably the easiest activity to build into everyday life. Some people are happy to walk for the sake of walking but others are not. If you are one of the latter then try increasing the amount of walking you do as a natural part of your everyday life, for example, taking the stairs rather than the lift, walking rather than using the car for local errands or getting off the bus one stop earlier.

*"I don't actually take physical exercise but I walk – it's not that I wouldn't go to the gym. Every morning, I walk down, maybe a quarter of a mile, to the bus. The simple reason for that is, there's no buses when I go out in the morning, and it's become a habit now that instead of catching the bus that'll drop me right outside here, I'll take the other one and I'll walk down."*



British weather and living in a hilly area can make walking outdoors a challenge.

*"I mean this is what the nurse said at the surgery. She lives round this area. 'You're in an awkward place. There's not a lot of flat.' But what I have done I'll walk up as far as the post box and back. It's a walk isn't it?"*

Active housework, gardening and climbing stairs are also forms of exercise. Muscle strengthening and range of motion exercises can be done while watching TV, in bed, or while taking a bath.

- **Activities that are part of a person's usual lifestyle.** Different people have different feelings about what is right for them. Some people would not, for example, see gyms and fitness centres as the kind of place they would go to, whereas others feel quite at home there.

- **Social support and having fun.** Doing exercise with someone else is usually more enjoyable, and having someone take an interest gives encouragement.

*"He (GP) showed me in the surgery what exercises to do. And I've got a daughter who is a fitness fanatic. So, you know, she said, 'Are you doing those exercises?' I've been okay with them."*

Many people attending group activity sessions say that the social interaction is as important as the exercise.

- **Local facilities and opportunities.** Having opportunities for physical activity close to home, particularly if they are led by someone who is experienced in working with people who have joint problems, makes it easier to keep going.



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*"... Different people have different feelings about what is right for them..."*



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### Things that can get in the way of people keeping active:

- **Worry about making a joint problem worse.** Exercising a joint helps to strengthen the muscles around the joint, and increase its range of movement. So, exercise helps to ease a joint problem not make it worse.

*"Movement does tend to relieve the pain. There are times when we've gone out for a very long walk and I've thought, 'I'm going to suffer for this.' But actually, sometimes it's better. I think that's a bit odd because you've used the musculature an awful lot and you'd have thought that's going to exacerbate the problem. But it doesn't; it seems to be the opposite."*

The sound of bones clicking or grating, when doing neck exercises for example, is not unusual. Such noises seem loud because the joints are near the ears but they are not an indication that the joint is being damaged.

Some people who have OA think pain is an indicator of harm and worry about masking it with medicines when exercising. Experts think that in a long term condition, such as OA, pain is not a sign of doing harm to a joint. They also think that using a pain relieving medicine, like paracetamol, before undertaking physical activity is a good idea, if it makes exercising more comfortable.

- **Worry about overdoing exercise.** Prolonged and extremely strenuous use of a joint can be harmful. If you have not been very active for a while it is important to build up slowly. It is usual to experience some aches and pains after exercise, but gradually these fade. From experience, you will learn to pace yourself, that is, to find your own optimal balance between doing too much and doing too little.

*"I tire a little bit more quickly than I used to. I'm not 18 any more - accepting that you are physically unable to do the things you used to do. In the garden I have seats around so that I can sit down any time - I do about a quarter of an hour's work and five minutes sitting."*

Most health professionals think that under-exercising is a bigger problem than over-exercising.

- **Fear of falling.** Falls amongst older people, particularly the very old, are not uncommon. So, having a fear of falling is understandable. Research has shown that one of the ways of preventing falls is by improving muscle strength and balance, through being physically active, particularly walking. Walking

© Sport England



aids can help by giving people the confidence to move about, and this in turn will help prevent falls. Muscle strengthening exercises can be done while sitting down.

- **Having other health problems in addition to OA.** People who have several health problems often find their own way to continue to be active. Where there is concern that exercising to help ease OA symptoms may make another medical condition worse, a physiotherapist or a GP can tailor advice about exercise to meet specific needs.

### Getting started

If it is some time since you have done very much physical activity, perhaps start by joining a gentle walking group. As a result of a national programme to encourage walking, many local authorities have organised such groups. Water based exercise sessions are also suitable because water supports the body, making it easier to move. Some arthritis support groups hire hydrotherapy pools at a local hospital; some swimming pools have special sessions for older people to exercise under the guidance of an instructor.

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### HYDROTHERAPY

Hydrotherapy involves doing exercises in a pool where the water is maintained close to body temperature. Some hospitals have their own small pools with steps and handrails to enable those who have restricted movement to get in and out easily. Some public pools also offer hydrotherapy. The warmth and the support of the water relaxes muscles and eases pain, making exercise easier.

*'I feel a great warmth throughout my body after I have been in the pool, which alleviates the pain in my spine'*

The Telford and Wrekin Arthritis Support Group hires the hydrotherapy pool at its local hospital weekly, and pays for a physiotherapist to attend every two weeks to advise on exercise programmes. Volunteers from the support group are specially trained to supervise the sessions and offer help with exercising if so desired.

Those who use the pool say that they experience an improvement in their mobility and relief from pain and stiffness.

*'I have missed two sessions at the pool and have noticed that I have had more pains in my legs.'*

Exercising in a group in this way has the added bonus of social contact.

*'I enjoy the company because I get lonely and down when I don't see anybody. I always think I walk out better than when I walk in.'*

(April 2007)



Many social centres for older people offer group activities such as keep fit or a gentle exercise called Tai Chi. Those who take the classes adapt their instruction according to what people feel able to do. So if you don't feel able to do an activity standing up, then you can do it sitting down. Organisers know that some people worry about going along to a session for the first time - particularly if they are on their own - and those leading a group ensure that one or two of the regulars take care of someone new.

## ■ 2. The best kind of footwear



There is a strong medical opinion that shoes which have a thick shock-absorbing sole, very low heels, wide fronts (so that toes can splay out when walking) deep soft uppers, and which fasten, are most suitable. Trainers are a type of shoe that fits this description. Several shoe manufacturers make shoes with these features. It is also possible to buy cushioned insoles to put into ordinary shoes.

Some companies sell insoles which are moulded to realign the feet and thus influence posture. This they claim will relieve pain from arthritis. However, their suitability depends on the foot being out of line in the first place. If the foot is not out of line then the padding could potentially make a back or leg problem worse. Only try these if you can get advice, from a physiotherapist or podiatrist (chiropodist), about their suitability for you.

## ■ 3. Using warmth to relieve pain, and cold to relieve swelling



Warmth has been used for thousands of years to relieve pain and stiffness. A warm bath or shower is part of some people's daily routine for managing OA. There are also different sorts of heat pack on the market. Some wheat or gel filled pads can be warmed in the microwave or on a radiator, while others warm up by themselves on exposure to air. They can be wrapped around an affected joint, or a hand/foot can be placed inside. Some are reusable.

*"I've got a knee pad. You stick it in the microwave, you warm it and you pop it on the knee. Obviously what it's doing it's masking the pain."*

People who attend hospital clinics with hand pain may be offered heat treatment with a wax bath prior to exercise. Wax baths can be prepared at home but are fiddly and time consuming to set up, unless an electrical wax bath with a heat control is used. Warm wa-

ter can work just as well; and washing up incorporates warmth and exercise for the hands.

Packs like wheat/gel pads can be made warm or cold. Cold can relieve swelling and thus help ease pain. An ice pack (or bag of frozen vegetables) can be applied over the joint for up to twenty minutes every couple of hours. Do not apply ice directly to the skin as it can cause an ice burn – wrap the pack in a tea towel. Some people use heat and cold alternately. By a process of trial and error you can find out what works best for you.

#### ■ 4. Body weight and joint pain

There is evidence that for those who have knee OA being overweight can make the joint damage worse. Many people would like to be thinner than they are. Sometimes this is because people feel better about themselves if they have a slimmer body shape, and sometimes it is for health reasons.

*“My son and daughter-in-law said they were going to a slimming club, so I said I’ll tag along, it’s worth a try. And I’ve lost half a stone in four weeks and I can honestly say I haven’t been hungry. But the weight had to go because I’d put on so much.”*

For some people though, losing weight can be a bit of a struggle. Trying to do it just by eating less does not work as well as combining dieting with increased levels of activity. Those who have OA in their knees can be in the vicious circle of finding it difficult to get their weight down because it is painful to move, and being overweight making their joint pain worse. If this applies to you, taking painkillers before doing physical activity can help you break out of the circle.

The good news is that after losing some weight your knees are likely to become less painful, so you may no longer need to take painkillers before exercising.

*“One and a half stone weight loss has made such a difference to my mobility and energy levels! At the moment I am feeling very positive – aches and pains are almost a thing of the past.”*

If your doctor thinks that your weight is affecting your health, for example, making your joint problem worse, then he or she will probably raise the matter with you. Ask about any local support to lose weight that the NHS or local authority offer.



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## ■ 5. Using distraction and relaxation to reduce pain

The source of pain in OA is not well understood. How people experience any pain is complex and involves not just physical changes to the body but also how people are feeling in themselves, and what other things are going on in their lives.

*"And if you're feeling interested and happy, and the sun's shining then you don't focus on the pain so much. If you retreat into yourself, I suppose it must be more intense because there's nothing else for you to think about. Any distraction lessens what's happening to you, doesn't it? Something else takes your attention."*

When anxious or stressed it is common for people to tense their muscles – particularly in the neck, shoulders and back – often without realising that they are doing so. Pain feels worse when muscles are tense, so learning to relax muscles can help ease pain.

One way to do this is by deep slow breathing. Breathe in through the nose, hold the breath briefly and then let the breath out slowly through pursed lips. Another way is to learn muscle relaxation techniques. The Expert Patients Programme teaches relaxation (see page 52) or you can buy/borrow tapes to learn to do this. It may take some time before relaxing comes naturally.

## ■ 6. Can eating certain foods help?

There are lots of claims made for foods that cure arthritis.

*"There was a big piece in the newspaper the other day, on the medical page, about rose hip syrup. Well, I used to give that to my boys when they were little, and they took it off the market because they said it rotted their teeth. Now they put all this in the paper about this is good for your arthritis."*



It is often not clear whether such claims refer to OA or to rheumatoid arthritis. Many people with joint pain are interested in the question of whether certain foods can make a difference. Nearly all the research that has been done on this topic has looked at individual constituents of foods, such as particular vitamins or fatty acids. There is very little research on whether or not OA can be affected by a diet rich in the foods in which such constituents are found naturally.

Often the research studies have not been well designed, and so the findings are open to dispute. Diet is an area where further research



is needed before it can be said if a particular diet is likely to help ease the symptoms of OA, and/or affect the underlying joint problem.

There is a lack of scientific evidence that either cod liver oil or honey is beneficial for OA.

Food supplements and herbal remedies can interact with prescribed medicines. Pharmacists have information on the active ingredient in herbal and other such remedies and can advise whether they could present a problem to someone taking other medicines.

### *What about glucosamine and chondroitin?*

Some of the food constituents that have been tested are thought of as drugs in some countries, but as food supplements in others. In the UK they are classified as food supplements and this means they can be bought from health food shops.

Glucosamine and chondroitin are two such substances. They are involved in producing certain types of proteins and fats in the human body that, in turn, form part of the tissue in a joint. There is no evidence that either substance can alter the structure of a joint i.e. reverse any damage. There is conflicting evidence that glucosamine can help relieve pain. There are two types of glucosamine. The largest investigation of one type – glucosamine hydrochloride – found no benefit. One big study of the second type – glucosamine sulphate – did find it eased pain, though another big study did not.

Some doctors have prescribed glucosamine in the past. The National Institute of Health and Clinical Excellence (NICE) has advised doctors not to prescribe glucosamine (chloride or sulphate) because they could find no evidence that it helped to heal joints and inconclusive evidence that it helped to relieve joint pain.

However, NICE has said that since there is no evidence of glucosamine causing harm and as it might possibly help ease joint pain, people may want to give it a try. The recommended dosage for glucosamine sulphate is 1500mg a day. If you do decide to try it make sure that you achieve the daily dose of 1500 mg of glucosamine sulphate. Prices vary. You will need to calculate how many doses of 1500 mg are in the package, in order to work out which is the cheapest. It takes perhaps three months before any benefits might be felt. So if you have not noticed any benefit after that time then it is probably not going to work for you.

Glucosamine is often combined with chondroitin (and sometimes other things like fish oil or fruit juice.) Since there is no evidence that chondroitin is helpful for joint pain, NICE do not recommend trying combined preparations.





You may come across adverts for an 'arthritis cream'. Glucosamine is a constituent, together with emu oil, which the manufacturer says aids the absorption of glucosamine. Advertisements that promote the success of such products often contain quotes from letters of satisfied customers; the quotes even if genuine are likely to be selective. Nevertheless, if you can afford them and want to give them a try, they are unlikely to cause any harm. The rubbing action alone, when applying the cream, may ease pain and stiffness.

There are some lipids (fats are a type of lipid), such as those from soya bean and avocado, which may have a similar effect to glucosamine, if it does have an effect.

### ■ 7. Do elastic bandages, collars and knee straps help?

Some people use elastic bandages on a painful wrist, knee or ankle to help ease the pain and protect the joint. However, doctors, nurses and physiotherapists advise against the regular use of bandages or neck collars, as this will cause muscles to become weak, which will make movement more difficult.

There is also a strap which can be put around a knee. Advertisements claim it will relieve knee pain by pushing up the kneecap, thereby bringing the knee into line with the rest of the leg. Whether the knee strap could possibly help depends on whether the pain is caused by the knee being out of line in the first place. However, it is unlikely to do any harm if you think it is worth a try.

### ■ 8. Courses in self-management

In many areas of the country there are self-management courses that are part of the NHS Expert Patient Programme. The course involves six 2.5 hour group sessions. They are led by tutors who themselves have long term illnesses, and who have been specially trained to deliver the course. The tutors cover many topics including the following:

- Dealing with pain and extreme tiredness
- Coping with feelings of depression
- Relaxation techniques and exercise
- Healthy eating
- Communicating with family, friends and professionals

Meeting other members of the group and having an opportunity to talk over experiences and share ideas can also be a boost.



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### ■ *Things to remember*

1. Both general physical activity and specific exercises for joints are an essential part of managing OA. Build up slowly and take rests when needed, but try to be physically active everyday.
2. If you normally exercise regularly then keep it going.
3. Pain when exercising is not an indicator that a joint is being damaged. Using a painkiller like paracetamol may make doing physical activity more comfortable.
4. When trying to lose weight it is better to combine eating less with being physically more active.
5. There are many ways to manage joint pain and stiffness, such as applying warmth, relaxation and distraction. Different approaches can be combined. Keep a record of the things you try.



## Chapter 5 - Managing and treating joint pain: Adding to the essentials

### National Institute for Health and Clinical Excellence (NICE) guidance

February 2008

*While some individuals may experience a worsening of symptoms the vast majority of people, including those severely affected, will not have any adverse reaction to controlled exercise (Hurley et al. 2007). For example, patients with significant osteoarthritis can ride a bicycle, go swimming or exercise at a gym with often no or minimal discomfort.*



The treatments described in this chapter will probably sound more like 'medical treatments' than those described in chapter 4. They are not, however, meant to replace those basic ways of managing joint pain for which there is evidence of effectiveness – physical activity, suitable footwear, losing weight if overweight, heat and cold, and distraction and relaxation. If despite doing the essential basics you are still finding it difficult to manage, then you and your GP might want to talk about some of the following treatments.

### ■ 1. Physiotherapy

A key message of this guidebook is that regular physical activity is an effective way of managing the symptoms of OA.

If, though, your symptoms get worse after doing appropriate physical activity, this does not mean that you should stop exercising but you may need to seek further advice. If you want an exercise programme tailored to your particular problem or simply want further advice and reassurance about taking exercise, then a physiotherapist can help.

Physiotherapists can devise suitable exercise programmes - land and water based - as well as advising more generally on aerobic exercise, such as walking and swimming. Physiotherapists also use manual therapy (manipulation and stretching) to help improve the working of joints affected by OA and to alleviate pain. This is especially effective for hip pain. Manual therapy is not usually offered on its own but as part of a package of care with exercise.

### ■ 2. Electrotherapy

TENS (Transcutaneous Electrical Nerve Stimulation) is a machine that sends electrical pulses through the skin, which some people find helps relieve pain and stiffness. There are different makes and models of TENS with a range of prices. Physiotherapists can advise about the different kinds of machine and how best to use them.



They may also be able to lend one out for a trial period. If a TENS machine does not seem to be helping then try experimenting with different pulse strengths and length of time of application.

### ■ 3. Aids and devices

#### *Walking aids*

Some people don't like the idea of using a walking stick because it makes them feel old. Others feel that even if a stick is seen as a symbol of old age, the benefit it brings, in giving them the confidence to walk, outweighs the disadvantages.

*"I used to walk very briskly. Well, I'm not doing so now. Mind you, as I say, I'm using a stick – in fact I've got two sticks but it makes me feel old and doddering if I have two. But I do find that it makes me a bit more sprightly if I've got a stick."*

A walking stick needs to be adjusted to the appropriate length for the user. The retailer supplying the stick should do this. Sticks come with different types of handles, so that people who have painful hands can select one that is most comfortable for them. The tip has a rubber grip to prevent the stick from slipping, which will need to be replaced from time to time.

Often, people are advised to use a walking stick on the side opposite to the affected leg, and that the stick and the affected leg should move forward together. Using a walking stick in this way reduces the pressure on the painful leg joint. However, some people use their stick as a 'third leg' in case their leg gives way, and to do this they use the stick on the same side as the leg with the problem. So, if the purpose of the walking stick is to help you reduce pressure on the hip or knee then use it on the side opposite to the affected leg. However, if the purpose is to improve your balance and to feel safer when walking then use the stick on the same side as the problem leg.

Recently there has been interest in the use of Nordic walking poles for people with OA of the hip or knee. A Nordic walking pole is longer than a walking stick and has a loop or grip for holding. They are used in a style of walking that is described as cross-country skiing without skis (or snow!). There are claims that posture and walking is improved, the pressure on knee joints is reduced, and more energy is burned during Nordic than ordinary walking. (So in theory Nordic walking could help with weight loss.)





### **Assistive devices**

There are lots of gadgets on the market to help with everyday tasks and hobbies. Some may prove to be useful and some may not. Occupational therapists have particular expertise in this area. It is best to get advice before buying specialist equipment. Some local authorities, hospital trusts and voluntary organisations have set up independent living centres, (See Assist UK page 51), which do not sell equipment, but where there are people who can advise on the suitability of different products, and where equipment can be tried out.

### **Insoles, supports and braces**

In OA the joint may be out of line. Shoe insoles, braces for hip and knee, and thumb splints may help correct a misalignment and provide support. It is thought this can help decrease the pain and improve physical function. Physiotherapists, podiatrists (chiroprodists) or occupational therapists can assess whether or not such products are suitable.

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## **■ 4. Medicines for managing pain**

From a patient's point of view, medicines are often the least preferred way to manage pain.

*"I think you're frightened of getting used to drugs and you rely on them. I'd rather take them when I really need them. At the moment I think I can cope all right."*

However, even when patients would ideally like to be able to manage without medicines, some find they need to take them.

*"I used to stride out and I can't do that anymore. I seem as though my joints are stiff. But if I take the tablets I get an easing...I get a loosening in my joints. Whether it's because I don't feel the pain, I don't know but when I take them I'm a lot better."*



## WHAT KINDS OF PAINKILLERS (ANALGESICS) ARE SUITABLE?

There are different types of medicine that can help manage pain from OA:

### *a. Paracetamol*

For mild to moderate pain paracetamol is the best painkiller (analgesic) to try first, and to continue with, if it works. Paracetamol is often the first choice of doctors as it is an effective painkiller and is safe when taken at the recommended dose. For adults, two 500mg tablets can be taken up to four times in 24 hours. (Do not take more than this because an overdose may cause irreversible damage to the liver.) The good news is that paracetamol does not build up in the body over time, and can be taken at the recommended dose in the long term. If paracetamol is not effective for you there are other medicines that your doctor may prescribe.

### *b. NSAIDs - creams and tablets*

A group of medicines called non-steroidal anti-inflammatory drugs (NSAIDs) have both an analgesic and an inflammation-reducing effect. OA does not often involve inflammation, so it is mainly the analgesic effect of an NSAID that is beneficial to someone who has joint pain. NSAIDs come in a cream form that is applied to the skin over the affected joint – these are called topical NSAIDs. They also come in a tablet form to be taken by mouth.

#### **NSAIDs in a cream form (topical NSAIDs)**

While a few topical NSAIDs are available only on prescription, there are a number, most of them containing an NSAID called ibuprofen, which are on sale to the public. There is evidence that they may help relieve pain in knee and hand OA. They should be applied with a gentle massage, using only the amount specified on the information leaflet. (The massage alone can help ease pain.)

Pain relief is most effective during the first two weeks of using the cream. They can be used in conjunction with paracetamol. Topical NSAIDs are not associated with the side effects of NSAIDs taken by mouth, which are described below. For this reason health professionals think that topical NSAIDs are the preferable treatment for hand and knee OA.



#### **NSAIDs in tablet form**

Most NSAIDs that are taken by mouth are available only on prescription. Ibuprofen is an exception, for it is an NSAID that can be bought in shops and pharmacies. The pain-relieving effects of an NSAID should start to work quite quickly. If an NSAID is not having



an effect on pain after a week or two, then it is probably not going to be effective.

NSAIDs have been in use for many years and have been associated with serious side effects. Diclofenac (brand names include Diclomax and Voltarol), and naproxen (brand names include Synflex) are examples of these older NSAIDs.

More recently a different type of NSAID, called a COX-2, has been developed which it was thought would have fewer side effects. Celecoxib (Celebrex) is an example of a COX-2. As more has been learned about the action of NSAIDs and COX-2's on the body, it has been realised that they are not as distinctly different as was first thought. (From now on the word 'NSAID' will refer to COX-2s as well as the older NSAIDs.)

The reasons why doctors prefer patients to take paracetamol rather than NSAIDs, are because NSAIDs are much more likely than paracetamol to interact with other medicines, and to cause side effects. The most common side effect is stomach problems. With long term use and high doses, NSAIDs, particularly the older type, can cause stomach ulcers or inflammation, which can cause bleeding. A medicine to lessen stomach problems is usually prescribed with an NSAID. NSAIDs can worsen kidney function and blood pressure control. Older people are more at risk than are younger people. They are also associated with a very small increased risk of heart attacks and strokes.

Ibuprofen taken in the dose and way recommended on the package is less likely to cause problems.

If any new symptoms develop while taking an NSAID, no more doses should be taken and advice should be sought from a doctor or pharmacist as soon as possible.

The advice that is given to doctors about NSAIDs is to prescribe the lowest effective dose for the shortest possible time to control symptoms.

They should be taken with or after food, as that reduces the likelihood of stomach side effects. Only one brand of NSAID should be taken at a time, and taking an NSAID along with a low dose of aspirin may increase the risk of stomach problems and reduce the benefit from the aspirin. For some people who have asthma, NSAIDs can bring on symptoms of asthma.

### *c. Creams containing capsaicin*

An age-old remedy for painful joints is to rub in lotions which have a stinging effect. There is evidence that capsaicin cream, whose active ingredient is an extract of chillies, can help relieve pain. It may burn at first, but after several days use can give a useful numbing

effect. It does not work for everyone, and for some the initial burning puts them off using it. However, it can be particularly effective for the small joints of the hand, such as the base of the thumb, as well as for knee OA.

Capsaicin is available in the UK on prescription only. It should be applied with gentle massage onto skin that is not inflamed or broken. Hot baths or showers should be avoided just before and just after applying it.

The use of topical NSAIDs or capsaicin, together with paracetamol, and along with regular exercising of affected joints, can help people to cope with flare ups of joint pain.

#### **d. Opioids**

Opioids are a type of painkiller that were first made from the juice of the opium poppy. Nowadays many are synthetic – they are manufactured in a laboratory. They are used for moderate to severe pain.

Some types of opioid are stronger than others. Morphine is an example of a strong opioid and codeine of a weak one. Some types of weak opioid can be bought over the counter at shops and pharmacies.

Long term use of opioid analgesics may cause people to become dependent on them. Some people have said they make them feel 'woozy'. Constipation is also a common side effect with opioids taken by mouth. People should not drink alcohol when taking opioids.

#### **e. Cortisone injections**

An injection into a joint may give temporary benefit to those with moderate to severe pain.

### **■ 5. Complementary and alternative medicine**

Complementary and alternative medicine includes a wide range of therapies. Amongst the best known are acupuncture, osteopathy, chiropractic, homeopathy, herbal medicine, aromatherapy and massage. Surveys have found that complementary therapies are popular with people who have osteoarthritis-type joint problems.

Most people use this kind of treatment not to find a cure but to help ease the symptoms, particularly the pain, and so lead as normal a life as possible. Often they seek help from a complementary therapist after they have seen their doctor and have tried out any treatments offered there. Many people continue to see their GP alongside a complementary therapist. In some parts of the country,



therapies such as acupuncture, osteopathy and homeopathy may be available on the NHS.

Complementary medicine is seen by many who try it to have several advantages over conventional medicine:

- Complementary medicine often looks at a medical problem in the context of the whole person and does not focus solely on treating symptoms
- Concern that conventional medicine often involves taking drugs whose side effects may be as problematical as the symptoms they are treating
- Complementary therapists may have more time and take account of personal issues that might also be affecting a health condition

Two drawbacks to getting care from a complementary therapist are:

- Getting assurance that the therapist is reputable
- The cost

For all of the therapies listed below there is an official body which registers those that have undertaken a recognised course of training in their field. It is quite in order to phone a therapist before starting treatment to ask about the cost, the likely number of treatment sessions and details of what the treatment will involve.

Whether people continue to seek care from a complementary therapist or not depends on whether the therapy is felt to be effective. Most people adopt a try and see it approach; if the therapy does not seem to make any difference to their problem after four or five sessions they stop it, and perhaps try something else. (A therapy such as the Alexander Technique will require more than five sessions to teach the method.)



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A list of common complementary therapies used by people with OA

Therapy	Description
Acupuncture	Acupuncture has been used in Chinese medicine for at least 2,500 years. It involves stimulating the skin in different places (acupoints) in the body, usually by inserting thin needles into the skin. For OA it is used to treat the pain. Many physiotherapists offer acupuncture.
Acupressure	Acupressure has been described as acupuncture without the needles. Deep but gentle finger pressure is applied to the acupoints.
Chiropractic	Treatment consists of a wide range of manipulative techniques designed to improve the function of the joints, and so relieve pain and muscle spasm. Ice, heat or massage treatment may be recommended. Chiropractors also offer individual advice about lifestyle, work and exercise that help to manage the condition and prevent a reoccurrence.
Homeopathy	Based on the idea that the body is thought to naturally heal itself. Homeopathic medicines contain substances in very dilute form that cause the same symptoms as the problem being treated and which, it is claimed, stimulate the body's healing process. Choice of remedy depends not only on the symptoms but also on the nature of the person who has the condition.
Osteopathy	Based on the notion that problems or pain associated with the structure of the body can also affect the working of the body. Osteopaths use their hands to stretch, massage and touch the body in a variety of ways using a mixture of gentle and forceful techniques. The aim for those who have OA is to increase the circulation and drainage from the affected joints, to reduce any inflammation present and to enable the joints to move as well as they are able to. This, it is thought, helps reduce the stress that is placed on the affected joints.
Alexander Technique	This is a movement therapy designed to identify posture problems in the body and to teach appropriate ways of standing, sitting and moving that reduce strain and muscular tension. Movements (to be practised at home) are taught, that aim to increase body awareness, correct posture and to help movement. Particular attention is paid to the way that the head is held, and to freeing the spine and enabling muscles to lengthen.

## ■ 6. Surgery

Most people who have OA will not need surgery. Usually joint replacement surgery is only considered when symptoms are having a substantial effect on an individual's ability to do everyday activities, and after a patient has tried at least the basic forms of treatment described in chapter 4. If your doctor does not mention surgery, you should not assume that it has been ruled out. If you want to know whether joint replacement is something that might be appropriate in your case, you should ask directly. Surgeons recommend that patients be referred to them before developing prolonged disability and severe pain.

Sometimes people who are offered surgery do not take up the offer straightaway. This can be for a variety of reasons, including concerns about how they will carry out caring responsibilities during rehabilitation, and how long the artificial joint will last.

*"And like I say because my sister was poorly I decided that I would put the operation off. --They tell you these knees only last ten to twelve years. Well I am sixty four this year, so if they last twelve years I am going to have to have it done again when I am seventy six."*

Do raise concerns such as these with a GP, so that they can form part of the discussion about whether or not it is appropriate and timely to be referred for surgery.

### ■ Things to remember

1. Physiotherapists can devise tailor made exercise programmes and help support patients to continue with their exercises. They can also advise on the use of insoles, supports and braces, and TENS machines.
2. Paracetamol and, for hand and knee OA, creams containing either an NSAID or capsaicin are the preferred drug treatments to manage pain. If paracetamol is not effective then doctors can prescribe other medicines, though there are concerns about the long-term use of some of these.
3. There are many special gadgets to help with everyday tasks. Before buying take independent advice, and try out the equipment to make sure it is suitable.
4. Many people try complementary therapies and find them helpful.
5. Only a small number of people with OA will require surgery.

## Chapter 6 - Feeling positive

### ■ *Adjusting to change*

Having joint pain may affect a person's ability to get out and about, carry out tasks at work and in the home, and pursue hobbies and interests. This understandably can lead to feelings of frustration and depression.

*"I knew I was depressed, but I went with the understanding that the depressive stage I was in was because of the lack of mobility and the pain in my feet when I walk or anything. I think what has happened like is my mobility has got me down really, I think I'm frustrated that I can't do the things that I want."*



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Feeling low, can in turn, make it seem an even bigger effort to get out, meet people and do things.

Some people have talked about the mental adjustment they had to make in order to come to terms with having a long term condition like OA, and accept some of the limitations that it can cause.

*"I'm a bit philosophical, really. I mean, you can't expect to do the things that you did when you were younger and you have to learn to grow old gracefully - more or less. It's a bit frustrating on occasions because inside I don't feel any different than I did when I was 20. It's only the (outside) framework that's changed. 'The spirit's there, but the flesh is weak,' I suppose."*

It is common for people, as they grow older, to say that they feel younger on the inside than they appear on the outside. Because having painful joints is commonly associated in people's minds with old age, some people, particularly those in employment, are often reluctant to tell others that they suffer from painful joints. The downside of this is that they miss out on the opportunity to see if there is a way that their work can be reorganised to make it easier for them.

When researchers asked people how they managed to be positive, these are some of the things they said:

*"Just carry on with life and try. Some people are worse off than me aren't they?"*





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*"The more exercise you do - it's painful - but you feel better for it. You feel 'Wow, I've achieved something I never thought I'd be able to do!'"*

*"Get involved with doing things for other people because it does take your mind off your own problems. Okay, it's painful when you're doing things, but you get so much enjoyment."*

### ■ **Socialising and having interests**

OA symptoms may coincide with life changes such as retirement, and that in itself can mean that people are less active, and that social contact is reduced, as people do not then meet with work colleagues on a daily basis. As a result joint problems may feel worse both because people are sitting more and because there is less to distract the mind.

*"I think to myself, 'As long as I can keep working, it's making me more mobile, I can keep going.' Whereas, I think if I stayed at home I would perhaps be sitting too much, and I think you get more problems if you sit about a lot."*

A vicious circle of pain and low mood – feeling down - may result. One way out of this circle is to do something that usually brings enjoyment.

The importance of feeling valued, of having a purpose in life, and friendships help prevent people from feeling low and leave them better able to cope with health problems. This is well recognised. One GP in South London has developed a novel way of working with patients who he feels would benefit more from involvement with other people than from medication. (See the box below.)

#### **TIME BANK AT RUSHEY GREEN HEALTH CENTRE LONDON**

A time bank is like a blood bank or babysitting club: *"Help a neighbour and then, when you need it, a neighbour - most likely a different one - will help you. The system is based on equality: one hour of help means one time dollar, whether the task is grocery shopping or making out a tax return"*

Dr Byng, a GP at Rushey Green Health Centre in London, was convinced that many of his patients who presented with symptoms of depression and isolation could be helped by increasing their contact with other people and finding a framework in which they could feel useful to society and needed by others – the Time Bank provides this structure.

*continued . . .*

... Time Bank continued

The Time Bank allows patients to provide support and help for each other. Ultimately, where it makes sense, the GPs are able to prescribe a friendly face or a lift to the shops once a week, instead of medication. The Time Bank there was launched in March 2000 and now has more than 60 active participants, regularly doing visiting, dog-walking, baby-sitting, shopping or anything from writing poetry to accompanying blind people shopping.

*"When I transferred to Rushey Green Group Practice I was invited to join Time Bank, which has proved to be magnificent. Soon after joining, I had a successful total hip replacement. Besides exercises, I was told to begin walking again – that's easy indoors, first with a zimmer, then two crutches, and now one crutch. But, I longed to go out after being indoors for over two years. Time Bank came to my rescue; they were quick off the mark! The Time Bank Broker arranged for a lovely caring lady to "collect me" and take me for short walks, once or twice a week. Ah, lovely fresh air and sunshine and such kindness. I am walking much better now. Thank you Time Bank.*  
Mrs Treen, Time Bank Member

(Taken from London Time Bank Newsletter 2007)

People often find it difficult to ask for help, even from family because they feel that they are being a burden. The Time Bank approach makes it easier to ask for help.

Unfortunately, there are not Time Banks running in every area of the country.

However, there are other opportunities to mix with people and feel valued, through giving as well as receiving help. For example, the Beth Johnson Foundation, which is based in Stoke-on-Trent, runs a programme called 'Active in Age'. People who are over the age of fifty can learn how to put on gentle movement and exercise sessions, do falls prevention or reminiscence work with older people in their community. Your local Age UK office may be able to point you in the right direction to find out what is available in your area.



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## ■ Finding ways round problems

Leisure activities and hobbies are another important source of well-being. Pain or stiffness from OA can interfere with a pastime such as needlework or gardening, for example. However, this does not mean the end of doing such activities.

By observing people who have joint problems doing everyday activities, occupational therapists (OTs) can work out which step or steps prove difficult. They devise alternative ways of carrying out that particular step, in order to get round the difficulty. For



example, when sewing, if it is the fine movements needed to use pins or thread needles that is the stumbling block, then long pins with large heads and a threading device may make a difference. Accepting that symptoms of pain and stiffness mean everyday tasks have to be done in different ways is not giving into the condition, but working with it.

*"You find different ways of doing a job. I've been and bought myself an electric sander for one of the jobs that I do when making models, because it makes my hand ache too much to scrape the bits all off by hand."*

OTs are in short supply. You may have to wait to see one, though Independent Living Centres often have OT expertise available. However, people with joint pain, or their family and friends, can often identify and sort out the problem themselves. By slightly altering a technique, using an assistive device, accepting that progress is slower or taking part in a different way, people who have OA do manage to continue their hobbies and leisure interests. A man with OA in both knees, who had been a keen rugby player, missed not being able to go out running with his rugby friends. He explained how he maintained his link with a rugby club for which he had played in the past.

*"I know I'm on the periphery and a funny old man that used to play---but it gives me so much pleasure seeing these young men play, and mixing with the company, and getting in the field. Like I've been marking the pitches out, cutting the grass and doing that kind of thing this morning."*

### ■ **Things to remember**

1. Feeling down and frustrated is a natural and understandable reaction if pain and stiffness make it hard to get out and about, socialise and do usual things.
2. Those in employment can get advice from OTs on how to reorganise and adapt their work/workplace to meet their needs.
3. Continuing to join in social activities and do valued pastimes is important for giving structure and purpose to daily life. This in turn helps lift mood and makes it easier to cope with symptoms of OA.
4. Human beings are resourceful and find ways round the restrictions that joint pain may cause in everyday living.



## Summary

For most people who have OA, their joint problem will not get worse and worse. The most important thing that they can do is to continue to be socially and physically active, which is vital both for a sense of wellbeing and physical health. It may not be necessary to see a health professional very often about joint pain. This does not mean though, that people should feel that they are not entitled to seek medical help and advice if they have worries and uncertainties about their joint problem.

There follows a list of suggestions that have appeared in this guidebook that could help you manage your joint problem. You may like to keep a record of things that you have tried, both for your personal benefit and to show a health professional if you need to consult one.



*Personal record of things tried*

Things to try	What I did	When	What happened
<b>Aerobic activity e.g. cycling, swimming, walking:</b>  Fitness Classes e.g. Tai Chi, aerobics  Exercise on referral			
<b>Specific exercises (e.g. as devised by physiotherapist):</b>  Type of exercises Getting into a daily routine Finding exercises in everyday tasks Exercise group Hydrotherapy			
<b>Getting out and about:</b>  Take part in leisure/education opportunities  Become a volunteer			
<b>Walking aids:</b> Walking stick(s) Wheeled walkers Nordic walking			
<b>Losing weight:</b> NHS Group Private group e.g. Weightwatchers My own method			
<b>Footwear:</b>  change to roomier, soft shoes/trainers with no heels  Use insoles			

Things to try	What I did	When	What happened
<b>Paracetamol</b> Use before physical activity Take at first sign of pain Take regularly			
<b>Creams and ointments:</b> Topical NSAIDs Capsaicin cream			
<b>TENS Machine</b>			
<b>Food supplements</b> e.g. Glucosamine			
<b>Warmth/cold:</b> Warm and cold packs			
<b>Learning to relax muscles</b> Deep breathing Using a relaxation tape			
<b>Learning more about OA:</b> Expert Patient Programme Support group			
<b>Complementary therapies:</b> Acupuncture/pressure Chiropractic Homeopathy Osteopathy Alexander Technique			
<b>Being a problem solver:</b> Break down activities into steps to work out which is the problem step Pacing activities Accept a need to do things differently Get independent advice on assistive devices, benefits			

## NHS THERAPISTS OFFICIAL BODIES

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*Telephone or visit the web sites to find a therapist in your area.*

### **Physiotherapy:**

The Chartered Society of Physiotherapy (CSP)  
14 Bedford Row  
London WC1R 4ED  
Telephone 020 7306 6666  
[www.csp.org.uk](http://www.csp.org.uk)

### **Occupational Therapy:**

College of Occupational Therapists (COT)  
106-114 Borough High Street  
Southwark  
London SE1 1LB.  
Telephone 020 7357 6480  
<http://www.cot.co.uk/>

### **Chiropody/Podiatry:**

The Institute of Chiropodists and Podiatrists  
27 Wright Street  
Southport  
Merseyside PR9 0TL  
Telephone 01704 546141  
[www.iocp.org.uk](http://www.iocp.org.uk)

The Society of Chiropodists & Podiatrists  
Registered Office  
1 Fellmonger's Path  
Tower Bridge Road  
London SE1 3LY  
Telephone 020 7234 8620  
[www.feetforlife.org](http://www.feetforlife.org)

## COMPLEMENTARY THERAPIES - OFFICIAL BODIES

Telephone or visit the web sites to find a therapist in your area.

Therapy	Name of Body	Address	Telephone	Website
Acupuncture	Acupuncture Association of Chartered Physiotherapists (AACP)	Southgate House, Southgate Park, Bakewell Road, Orton Southgate, Peterborough PE2 6YS	01733 390006	<a href="http://www.aacp.uk.com">www.aacp.uk.com</a>
Acupuncture	British Medical Acupuncture Society (BMAS)	3 Winnington Court, Northwich, Cheshire CW8 1AQ	01606 786782	<a href="http://www.medical-acupuncture.co.uk">www.medical-acupuncture.co.uk</a>
Acupuncture	The British Acupuncture Council (BAcC)	63 Jeddo Road, London W12 9HQ	020 8735 0400	<a href="http://www.acupuncture.org.uk">www.acupuncture.org.uk</a>
Chiropractic	The British Chiropractic Association (BCA)	59 Castle Street, Reading Berkshire RG1 7SN	0118 950 5950	<a href="http://www.chiropractic-uk.co.uk">www.chiropractic-uk.co.uk</a>
Chiropractic	The General Chiropractic Council (GCC)	44 Wicklow Street, London WC1X 9HL	020 7713 5155	<a href="http://www.gcc-uk.org">www.gcc-uk.org</a>
Homeopathy	Alliance of Registered Homeopaths (ARH)	Millbrook Hill, Nutley, East Sussex TN22 3PJ	01825 714506	<a href="http://www.a-r-h.org">www.a-r-h.org</a>
Homeopathy	The Society of Homeopaths (SH)	11 Brookfield, Duncan Close, Moulton Park, Northampton NN3 6WL	0845 450 6611	<a href="http://www.homeopathy-soh.org">www.homeopathy-soh.org</a>
Osteopathy	British Osteopathic Association (BOA)	3 Park Terrace, Manor Road, Luton, Beds LU1 3HN	01582 488455	<a href="http://www.osteopathy.org">www.osteopathy.org</a>
Osteopathy	General Osteopathic Council (GOsC)	176 Tower Bridge Road London SE1 3LU	0207 357 6655	<a href="http://www.osteopathy.org.uk">www.osteopathy.org.uk</a>
Alexander Technique	The Society of Teachers of Alexander Technique (STAT)	1st Floor, Linton House, 39-51 Highgate Road London NW5 1RS	0207 482 5135	<a href="http://www.stat.org.uk">www.stat.org.uk</a>



## Useful organisations

### *Age UK*

Age UK works nationally and locally to support all people over 50 in the UK. At a national level Age UK runs a free information line 365 days a year from 8am to 7pm, has written information on numerous topics such as health care, housing, benefits, and helps support local branches of Age UK. Most of Age UK's work is done locally. You can find your local branch by visiting Age UK's website, looking in your telephone directory, or contacting the helpline. Local branches offer a wide range of services including opportunities for staying active.

Age UK England  
Tavis House  
1 - 6 Tavistock Square  
LONDON WC1H 9NA

Free helpline  
0800 169 6565

website: [www.ageuk.org.uk/](http://www.ageuk.org.uk/)  
email: [contact@ageuk.org.uk](mailto:contact@ageuk.org.uk)

### *Arthritis Care (AC)*

Arthritis Care is a national organisation who campaign to raise awareness about the needs of people who have arthritis, as well as provide information and support for them. They have a free confidential helpline line open from 10am to 4pm on weekdays, which can provide emotional and practical support. There is a network of local branches and groups throughout the UK. Most branches meet monthly and offer a wide range of activities, which may include exercise classes and hydrotherapy. You can find your nearest branch by visiting the Arthritis Care website or contacting the helpline

Arthritis Care runs 'Self management Courses', in which, people with arthritis learn to apply a range of techniques to control how much the disease limits their lives. The courses are free and delivered by trained volunteers who themselves have arthritis. To find out about courses visit the website or contact the helpline.

Arthritis Care  
18 Stephenson Way  
London NW1 2HD

Free helpline  
0808 800 4050

[www.arthritiscare.org.uk](http://www.arthritiscare.org.uk)

### **Arthritis Research UK**

Arthritis Research UK is a charity which raises funds for research into arthritis, educates health professionals about arthritis and provides information to the general public. ARUK produces a range of publications, which include ones showing exercise routines that can be done at home. Most of the publications can be ordered free of charge, or downloaded from the Arthritis Research UK website.

Arthritis Research UK  
Copeman House  
St Mary's Court  
St Mary's Gate  
Chesterfield  
Derbyshire  
S41 7TD

Telephone: 0 300 790 0400

[www.arthritisresearchuk.org.uk](http://www.arthritisresearchuk.org.uk)

### **Assist UK**

Assist UK leads a network of locally situated 'Disabled Living Centres' throughout the UK. Each centre has a permanent display of products and equipment. They provide an opportunity to see and try out assistive devices and to get information and advice from professional staff.

Assist UK  
Redbank House  
4 St Chads Street  
Manchester  
M8 8QA

Telephone: 0870 770 2866

e-mail: [general.info@assist-uk.org](mailto:general.info@assist-uk.org)

[www.assist-uk.org](http://www.assist-uk.org)

### ***The Dark Horse Venture***

The Dark Horse Venture is a small national charity that encourages older people to get involved in a new activity or interest. This is done through an award scheme. (It has been likened to the Duke of Edinburgh Award scheme.) Any retired or older person can join the scheme no matter how fit or frail. People can participate as individuals or as a group, by taking up an activity of their own choice that they have not seriously tried before. They set themselves a goal within their chosen subject and then continue to undertake their Venture for at least 12 months. Venturers find themselves someone who is willing to act as a kind of mentor.

To find out more - contact:

Dark Horse Venture  
St Mary's Millennium Centre  
Meadow Lane  
West Derby  
Liverpool  
L12 5EA

Telephone: 0151 256 8866

### ***Expert Patients Programme***

Community Interest Company (EPP CIC)

EPP CIC is a not for profit organisation which provides self-management courses for people who have a long term health condition. The aim of the course is to make people more confident to manage their condition and be able to get on with their lives.

The courses are free. They are run through the NHS and other bodies, such as voluntary organisations. Twelve to sixteen people make up a group, which meets weekly for six weeks. Each meeting lasts for 2 ½ hours and is led by two volunteer tutors who themselves have a long term condition. There is also an online course.

To find out about courses in your local area phone or visit the EPP CIC website.

EPP CIC  
32-36 Loman Street  
Southwark  
London SE1 0EH

Telephone: 0800 988 5550

[www.expertpatients.co.uk](http://www.expertpatients.co.uk)

## *Nordic walking*

There is a national group called Nordic Walking UK that trains instructors to run classes; the trained instructors run classes across the UK. Nordic walking poles cost upward of £50 (though they can be hired), and there is a charge for the classes and organised walks. The Nordic Walking website gives details about classes, as well as links to shops which not only sell the poles but also offer taster sessions.

Exercise Anywhere Ltd.  
The Barn  
Warrington House Farm  
Olney MK46 4HN

Telephone: 0845 260 9339

[www.nordicwalking.co.uk](http://www.nordicwalking.co.uk)

## *University of the Third Age (U3A)*

U3As are a national network of groups who are members of the Third Age Trust. The purpose of the Trust is to give opportunities for sharing learning, not for qualifications but for fun, for older people who are no longer in full time work. (Don't be put off by the word university - it simply means 'a bringing together of people' rather than an institute of higher education.) You can find your nearest U3A group by visiting the U3A website or contacting the Third Age Trust.

The Third Age Trust  
The Old Municipal Buildings  
19, East Street  
Bromley  
Kent, BR1 1QE

Telephone: 020 8466 6139  
Phone Lines Open  
Mon & Fri 9.30am to 1.30pm  
Tues to Thurs 9.30am to 5pm

[www.u3a.org.uk](http://www.u3a.org.uk)

### *Walking for Health (WFH)*

Walking for Health is an initiative of Natural England and aims to get more people walking in their own communities, particularly those who take little exercise or who live in areas of poor health. There are 500 walking schemes across England. Trained volunteers lead the walks. To find out about walks in your area visit the website or phone the WHI team.

Telephone 0300 060 2287

website: [www.wfh.naturalengland.org.uk/](http://www.wfh.naturalengland.org.uk/)

email: [wfhinfo@naturalengland.org.uk](mailto:wfhinfo@naturalengland.org.uk)



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## **Appendix 7.8 Arthritis Research UK Osteoarthritis edition of Hands On**

# Hands On

Reports on the Rheumatic Diseases | Series 6 | **Autumn 2011** | Hands On No 10

## Osteoarthritis: a modern approach to diagnosis and management

**Mark Porcheret, Emma Healey, Krysia Dziedzic, Nadia Corp** Arthritis Research UK Primary Care Centre, Keele University

**Nick Howells** Musculoskeletal Research Unit, Avon Orthopaedic Centre, Bristol

**Fraser Birrell** Musculoskeletal Research Group, Newcastle University

### Editorial

Our understanding of osteoarthritis has moved forward considerably over recent years. In recognition of this Hands On and Topical Reviews have joined together to give a comprehensive overview of this important and common problem.

Hands On focuses on the sea change in the way that we think about osteoarthritis. We have moved on from the concept of joint degeneration and affected patients need a holistic approach. As well as an update about core treatments the authors give very practical advice on how to approach explanation and provision of information. Patients tell us that what they want is greater support with self-management.

Topical Reviews\* gives a detailed account of current surgical approaches and delves into the basic biology of osteoarthritis as a process of 'tear, flare and repair'. The authors examine how a better understanding of cell biology and biomechanics may lead to better medical and surgical treatments.

Together, these publications shift the emphasis from passive, symptomatic treatment to active, patient-focused management underpinned by sound evidence.

**Simon Somerville (Medical Editor, Hands On)**

**Neil Snowden (Medical Editor, Topical Reviews)**

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\* Birrell F, Howells N, Porcheret M. Osteoarthritis: pathogenesis and prospects for treatment. Reports on the Rheumatic Diseases (Series 6), Topical Reviews 10. Arthritis Research UK; 2011 Autumn. [www.arthritisresearchuk.org/medical-professional-info](http://www.arthritisresearchuk.org/medical-professional-info).



The aim of this issue of Hands On is to bring you a series of short knowledge and skills updates – each one posed as a question – on osteoarthritis (OA) and its management. For those who want to know more, some further reading is indicated at the end of the report.

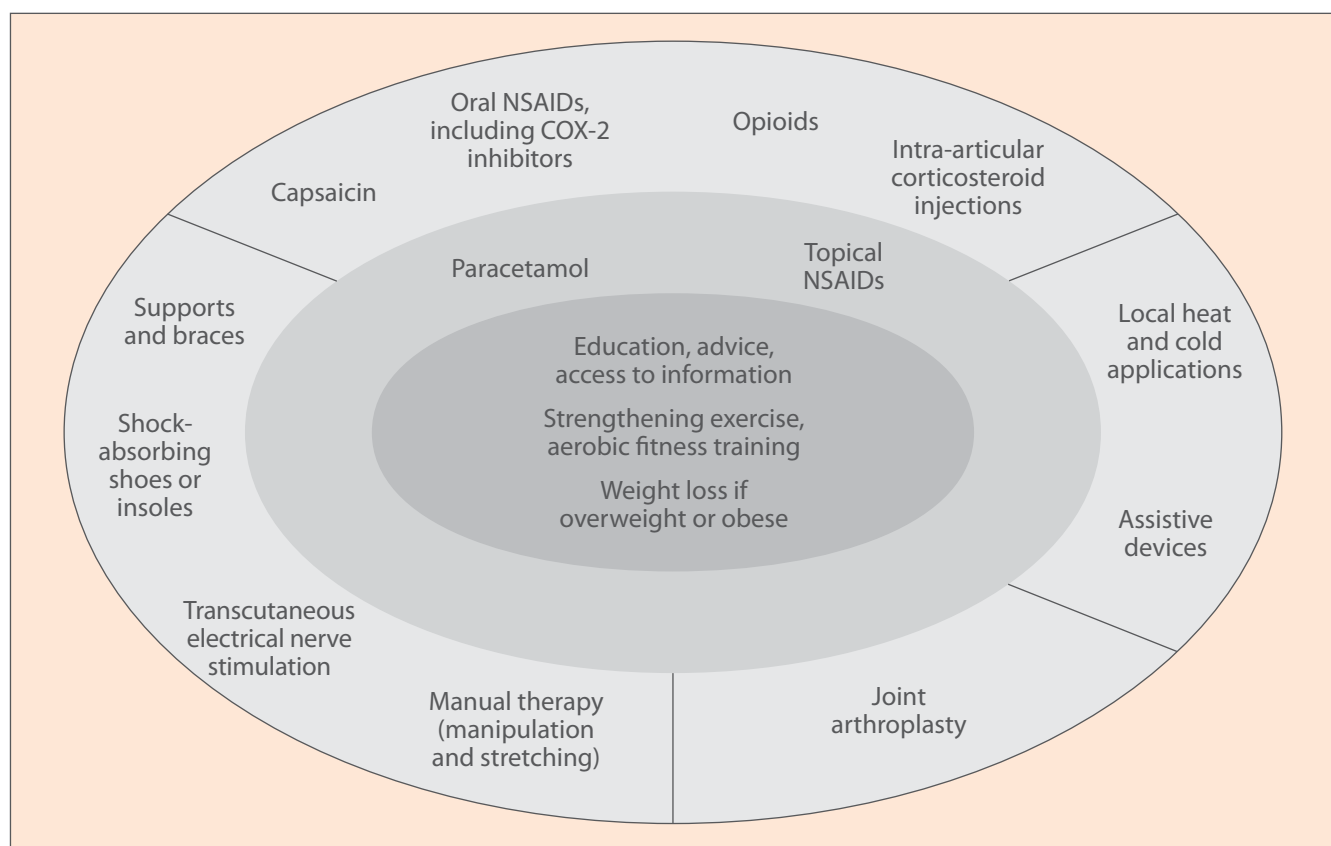
## What is OA and how should we think about it?

For clinicians OA is best regarded as a chronic pain syndrome and not a disease defined by the pathological changes in the joint. The National Institute for Health and Clinical Excellence (NICE) OA guidance defines it as a syndrome of 'joint pain accompanied by varying degrees of functional limitation and reduced quality of life'. It most commonly affects the knee, hip, hand and foot, and is a major cause of pain and disability. For example, in the UK in people aged 50 and over, one-quarter report knee pain lasting for more than 3 months in the previous year and one-third report pain, at any site, that interferes with their normal activities.

The impact of OA is best understood using a biopsychosocial, rather than a disease, model. The disease model (a direct correlation between pathology and symptoms) does not reflect its impact in many people with the condition. The biopsychosocial model, in which the psychological and social aspects are considered along with the pathology, captures the impact on the individual of factors such as mood, work status and income. The initial approach using this model focuses on helping patients to manage and cope with their pain and restricted activity. The biopsychosocial model is used to describe the assessment and treatment of OA in this report.

## How does the pathology arise in a joint?

OA is often described as 'wear and tear' but this is not an accurate reflection of the pathogenesis of OA. It is a metabolically active process which, in response to various insults, involves all joint tissues: cartilage, bone, synovium, ligaments and muscles. In the associated issue of Topical Reviews the term 'tear, flare and repair' has been proposed



**FIGURE 1. Treatments for osteoarthritis in adults.** The core treatments (centre) should be considered first for every person with osteoarthritis. If further treatment is required, consider the drugs in the second circle before the drugs in the outer circle. The outer circle shows other treatments to be considered if there is persistent pain or disability. (Reproduced from Conaghan PG et al. BMJ 336(7642):502-3 © 2008, with permission from BMJ Publishing Group Ltd.)

as a better representation of the pathology – the ‘tear’ representing aetiological factors such as overuse, obesity or malalignment, the ‘flare’ the role of inflammation in OA, and ‘repair’ the repair processes in and around the joint. These repair processes can lead to a structurally altered but symptom-free joint. However, the repair processes may be suboptimal, and the ‘tear’ insults may be ongoing, resulting in the symptomatic OA with persistent pain and disability that many of the patients come to us for help with.

## How well are we managing OA?

The short answer is not as well as we might be. OA has a prevalence comparable to diabetes – in a practice with a list size of 10,000 about 500 people consult annually with OA compared with about 450 with diabetes (K Jordan, pers comm), but it is not being managed in the systematic way we now take for granted for people with diabetes. In 2008 NICE recommended a systematic approach to treatment: (1) three core treatments (education, advice and written information; exercise and physical activity; and interventions to achieve weight loss) to be offered to all people with OA, (2) paracetamol and topical non-steroidal anti-inflammatory drugs (NSAIDs) as first-line analgesia, and (3) a range of options when there is persisting pain and/or disability (Figure 1).

However, surveys have shown that many patients with OA are not being offered these core treatments and that pharmacological treatments are being favoured over non-pharmacological ones. In addition, patients often report that their problems are dismissed or not fully addressed. In a recent survey by the British Society for Rheumatology of 800 people with OA, less than half reported that the GP had initially given (1) any information about OA or (2) any advice about exercise, and only about a third reported having received advice from the GP on weight loss.

## How should we diagnose OA?

The diagnosis of OA in the knee, hip, hand or foot is best made clinically (Box 1).

It is important to recognise that it is a working diagnosis that is being made, and so it may need to be reviewed over time and if symptoms change

### BOX 1. The working diagnosis of OA.

(Adapted with permission from National Collaborating Centre for Chronic Conditions. *Osteoarthritis: national clinical guideline for care and management in adults*. London: Royal College of Physicians; 2008 [= NICE CG59 full guidance].)

A working diagnosis of OA can be made without an x-ray if:

1. The person is aged 45 years or over.
2. There is chronic (lasting 3 months or more) joint pain that is worse with use.
3. Any morning stiffness lasts no more than half an hour.
4. An alternative diagnosis is unlikely.

or worsen. Although OA is more prevalent in older adults the diagnosis should be considered in anyone over the age of 45 years with knee, hip, hand or foot pain with characteristics 2 and 3 listed in Box 1.

## What is the differential diagnosis of OA?

The diagnosis of OA is often one of exclusion, i.e. with alternative diagnoses being considered and ruled out.

### Knee and hip

The serious, or common, alternative diagnoses that need to be ruled out are listed in Box 2 for pain presenting in the knee and hip.

### Hand

Alternative diagnoses to be considered in hand pain are: (1) carpal tunnel syndrome, (2) tenosynovitis and (3) inflammatory arthritis (rheumatoid arthritis, psoriatic arthritis and gout).

**Note:** the diagnosis of OA affecting the small joints of the hand can often be made positively from the history and examination – for example, chronic pain at the base of the thumb due to OA of the 1st carpometacarpal joint and the typical nodes associated with OA in the distal and proximal interphalangeal joints (Heberden’s and Bouchard’s respectively), especially when there is a family history of nodes. It should be remembered that people with polyarticular hand OA are at increased risk of knee, hip and generalised OA and these diagnoses should be sought for.

## BOX 2. Alternative diagnoses to be excluded at hip and knee.

### Both hip and knee

- Red flags
  - Fracture
  - Sepsis
  - Cancer
- Referred pain
  - To the hip from the back
  - To the knee from the hip
- Bursitis
- Fibromyalgia

### Knee only

- Inflammatory arthritis
- (Pseudo) gout
- Meniscal disease

### Hip only

- Polymyalgia rheumatica
- Avascular necrosis of the femoral head
- Meralgia paraesthetica (entrapment of the lateral cutaneous nerve of the thigh)

the pain – for example, when hip OA is suspected as the cause of knee pain, or when it is difficult to disentangle hip pain that is due to a back problem from that due to OA in the hip.

### When referring

An x-ray of the knee or hip prior to referral for consideration of arthroplasty is probably warranted to avoid referring patients with knee or hip pain who do not have significant pathology in the joint.

**Future imaging methods** Currently plain film radiography is the imaging modality most commonly used in the assessment of OA. However, both magnetic resonance imaging (MRI) and ultrasound have the ability to demonstrate synovitis in OA and are beginning to be used in clinical practice. Ultrasound in particular is becoming more available both as an outpatient investigation and at the bedside in clinic. In the future it may well form part of the assessment of patients with OA.

## How should we give and explain the diagnosis of OA?

Once the diagnosis of OA has been made patients need to be given the diagnosis in a way that is meaningful to them.

- Ask the patient what they think their problem is due to and address these ideas or concerns when giving the diagnosis.
- Use the phrase 'wear and repair' and not 'wear and tear' when giving the diagnosis of OA. Explain that, although we commonly refer to OA as wear and tear, OA is a metabolically active condition and not the simple mechanical wearing out of a joint, and so is about **wear and repair**.
- Tell the patient your reasoning behind making the diagnosis.
- Ask what ideas and thoughts the patient has about OA and give advice about OA tailored to these.
- Many patients confuse OA with rheumatoid arthritis, so it is best to directly say that you can't find anything to suggest they have rheumatoid arthritis.
- Many patients also believe that OA is inevitably progressive and disabling, and that 'nothing can be done'. It is important to paint a positive,

### Foot

There are many causes of pain in the foot that are not due to OA and cannot be covered here, but OA commonly affects the 1st metatarsophalangeal joint (hallux rigidus).

## When should we image a joint?

The approach taken in this report is that OA should be diagnosed clinically and not on the basis of an x-ray. One of the reasons for adopting this approach is the mismatch of x-ray findings and symptoms. Degenerative disease is a common finding on x-rays of older people, even in the absence of symptoms. It is also possible to have typical OA symptoms without typical x-ray changes. And even when symptoms and radiological evidence of OA are present in the same person in the same joint they may tell different stories: severe pain with minimal x-ray changes and severe radiological OA with minimal symptoms. It is therefore important to correlate x-ray findings with the clinical presentation and the evidence suggests that practice should be guided by symptoms and not radiographic appearances. However, there are times when imaging can be helpful.

### When diagnosing OA

X-raying the knee and hip can be helpful when there is diagnostic uncertainty about the cause of

though realistic, picture of prognosis (some of the facts in Box 3 may help you with this).

- Say that although OA is not curable there are many options for helping with the pain and for helping people to manage the problem themselves (self-management).

## Why should we provide support for self-management?

OA is a prime example of a condition that people can, and do, self-manage. The symptoms of OA – pain, stiffness and altered function – allow the condition to be monitored without the need for medical testing. This can be used (1) to assess the benefit of treatments and (2) as a trigger to seeking help when symptoms worsen. In addition, many of the treatments for OA do not need a prescription and rely on the commitment of the person to undertake them, for example weight loss and exercise.

But, despite the fact that patients self-manage OA, they also would like help from healthcare professionals in supporting them to self-manage.

## How should we provide support for self-management?

The role of the healthcare professional is to:

- elicit and understand how OA affects the patient's life and how they are currently self-managing
- help the patient identify what aspects of self-management they would like help with and what support they need
- agree with the patient what goals they would like to set and how they are going to achieve them (which may include identifying obstacles and ways to overcome them)
- increase the patient's confidence and the skills they need to achieve these goals
- provide evidence-based advice on effective treatments for OA when asked for it
- provide treatment or a referral for treatment if needed.

It is not about simply giving advice or issuing a prescription. One example of how to put into practice the approach outlined above is 'motivational interviewing' and the reader is recommended, if they have not already done so, to consider adopting this consulting style when

### BOX 3. Facts about the prognosis of OA.

OA does not inevitably get worse and in many patients the symptoms improve.

- Pain in hand OA of the interphalangeal joints often improves after a few years, but patients are left with permanent nodes.
- Pain in knee OA can improve and only about a third of patients develop progressive disease.
- About a quarter of patients with hip OA will have had a hip replacement 4 years after first going to see their GP, but three-quarters won't.

supporting self-management. Rollnick et al have written a very practical book on this for health-care professionals (see 'Further reading').

## What information and advice should we provide in the consultation?

Having understood how the problem is currently affecting the patient's life, and in what way they would like help managing it, you may need to provide information and advice on what treatments have been shown to be effective for OA. The NICE OA guidance recommends a number of evidence-based interventions which can be seen as a 'menu of options' as shown in Figure 1, and a subsequent review has updated the evidence for these recommendations for hip and knee OA.

### CORE TREATMENTS

**Written information about OA and its treatment** Arthritis Research UK and Arthritis Care produce a number of patient information booklets and leaflets on OA and its treatment, which can be downloaded from their websites or ordered from them (see 'Patient resources' section below).

**Exercise and physical activity** There is good evidence that both general aerobic exercise (for example walking or swimming) and local muscle-strengthening exercises (primarily quadriceps exercises for knee OA) are beneficial. A study reported in the *BMJ* in 2009 investigated the benefit, in older overweight adults with chronic knee pain, of exercising at home (in a way similar to that set out in the Arthritis Research UK 'Information and exercise sheet' for patients on knee pain – see





PLOT 1



PLOT 2

**FIGURE 2.** Cates plots for the benefit of exercise for pain from knee OA. (Reproduced with permission from Dr Chris Cates' EBM website, [http://www.nntonline.net/visualrx/cates\\_plot/](http://www.nntonline.net/visualrx/cates_plot/).)

'Further reading'). Participants were followed up for 2 years and the number who responded to exercise (in whom pain was reduced by 30% or more at 2 years) was determined. From this we can produce Cates plots for use in the consultation (Figure 2). The pattern for their use goes like this: 'If we take 100 people like you with knee OA, then without treatment (Plot 1) 33 people are going to have less pain after 2 years but 67 won't. However, with exercise (Plot 2) an extra 12 people will have less pain after 2 years but 55 still won't'. It is then necessary to let the patient consider the

plots and discuss with them what this might mean to them. It can be helpful to point out that (1) we can't predict which individuals will respond and so everyone needs to exercise for some to get the benefit, (2) this is not the only treatment for knee OA and pain, and those that do not improve can be helped in other ways, and (3) exercise is beneficial for other problems and has not been shown to be harmful.

**Weight loss** A systematic review of the benefit of losing weight for people with knee OA found

that an average weight loss of 6 kg resulted in reduced disability but not reduced pain. Further, the evidence indicated that a greater than 5% reduction in body weight over a 5-month period reduced disability.

## FIRST-LINE ANALGESIA

**Paracetamol** The number needed to treat with paracetamol to obtain relief of pain from hip or knee OA has, from two randomised trials, been calculated to be 7 (95% CI 4, 23), meaning that only 1 in 7 people benefit from treatment. This confirms what many GPs and patients probably believe: that paracetamol, though it should always be tried initially, is not going to meet the needs of people with more than mild intermittent pain. In addition, evidence is accumulating that in doses of greater than 3 g/day there is an increased risk of hospitalisation due to upper gastrointestinal (GI) perforation, ulceration and bleeding, which questions the advice to use paracetamol at full dose for prolonged periods. A very recent study has shown that at doses of 3 g/day over 13 weeks for pain due to knee OA, 20% of participants had a drop in haemoglobin of 1 g/dl or greater and further adds to the evidence for the safety of paracetamol.

**Topical NSAIDs** These are widely recommended in guidelines for the treatment of knee OA, and evidence supports the statement that topical NSAIDs are as effective as, and possibly safer than, oral NSAIDs.

## ADJUNCT TREATMENTS

**Capsaicin** The use of topical capsaicin is recommended for knee and hand OA but trial evidence of benefit is limited to the knee. Capsaicin is derived from chilli peppers and acts as a counter-irritant as well as reducing pain by depleting sensory nerve endings of neurotransmitters. The initial irritant effect limits its use in some people but a trial of use can identify those for whom it is effective.

**Oral NSAIDs (both standard NSAIDs and COX-2 inhibitors)** Patients should be advised that all oral NSAIDs have the potential to cause GI, liver and cardiorenal toxicity and that this limits their use in many patients, especially the elderly. When used patients should be recommended to take them at the lowest effective dose and for the shortest possible period of time, and to take a proton pump inhibitor at the same time. Patients

on aspirin should be advised to consider other analgesia initially, and then only consider oral NSAIDs if pain relief is ineffective or insufficient. See 'Further reading' on where to obtain detailed advice on the use of oral NSAIDs.

**Opioids** Both weak and strong opioids are recommended for pain relief for people with OA if paracetamol or topical NSAIDs are insufficient to relieve pain. Their use, especially in the elderly, is limited by frequent side-effects which were reported in a recent review of the evidence as: nausea (30%), constipation (23%), dizziness (20%), somnolence (18%) and vomiting (13%). The same review calculated the overall number needed to harm for opioids to be 5, and for strong and weak opioids to be 4 and 9 respectively.

**Intra-articular corticosteroids** There is good evidence from two systematic reviews that intra-articular corticosteroid injections for knee OA reduce pain: the number needed to treat for pain reduction at 1 week is 3 (95% CI 2, 5) but this increases to 5 for pain reduction at any time-point measured in the studies.

**Transcutaneous electrical nerve stimulation (TENS)** TENS has been shown to reduce pain and stiffness in knee OA and the NICE OA guideline recommends that patients should be referred to a healthcare professional for assessment, proper training in the use of TENS and follow-up.

**Assistive devices and walking aids** A review of the evidence in the NICE OA guideline concluded that ipsi- or contralateral cane use can significantly improve stride length and walking rhythm. To ensure that the cane is the right length, and that the patient has been given advice on how best to use it, referral to a physiotherapist or occupational therapist should be considered.

**Footwear** Footwear needs to be well fitting, so the foot is held in place and does not slide around. A wider fit is better so the toes do not get squashed, and soft, well-cushioned insoles may also provide some shock-absorbency and protection for the joints.

**Arthroplasty** Total joint replacement of the hip and knee has become a reliable intervention to improve pain, restore function and improve health-related quality of life in patients with ongoing pain and functional limitations resistant to pharmacological and non-pharmacological measures.

Case selection for surgery in OA is particularly difficult in view of the considerable variability in reported pain, function and clinical and radio-graphic findings. A number of scoring systems have been adopted into referral criteria by certain primary care trusts, most commonly the Oxford Hip and Knee Scores. It is important to emphasise that they have not been validated for and are inappropriate for use in this way. Referral should also not be restricted on the basis of age, BMI or associated co-morbidities. Guidelines have been developed summarising available evidence and expert opinion in order to clarify indications for referral and for surgery. An NHS patient decision aid is now available for OA of the knee. Further patient information is available from the British Orthopaedic Association and Arthritis Research UK (see 'Patient resources').

**Other surgical procedures** The NICE OA guideline recommends that 'referral for arthroscopic lavage and debridement should **not** be offered as part of treatment for osteoarthritis, unless the person has knee osteoarthritis with a clear history of mechanical locking (not gelling, 'giving way' or x-ray evidence of loose bodies)'. A full review on the use and effectiveness of surgical procedures, including novel interventions such as micro-fracture and autologous chondrocyte techniques, can be found in the associated Topical Reviews report on OA.

**Glucosamine** The place of glucosamine in the treatment of OA is still evolving. The NICE 2008 guideline recommended that glucosamine hydrochloride (the only preparation with a UK licence at that time) was not cost-effective for use in the NHS, but did suggest that patients could be advised to try privately bought glucosamine sulphate 1500 mg/day for 3 months to see if it was beneficial to them. Since then a licence has been granted for a glucosamine sulphate preparation and NICE is in the process of reviewing its OA guideline.

So what should you tell your patients?

- That glucosamine only reduces pain by a very small amount, but that it does on average reduce pain
- That this may hide a greater benefit for some people, and a lesser effect for others
- That if glucosamine is taken it should be as the sulphate at 1500 mg a day

- That the evidence is to be reviewed by NICE and its potentially revised recommendation is awaited.

**Other complementary and alternative medicines** A review of the efficacy of the large number of other complementary therapies that have been advocated is beyond the scope of this report, but a helpful and well-conducted review has recently been undertaken by De Silva et al, to which the reader is referred (see 'Further reading').

## Conclusion

Our ideas about osteoarthritis are changing. It is a dynamic process which is about 'repair' as well as 'wear and tear'. It is about helping patients to have the skills and confidence to better manage their own condition. There are many treatments with proven efficacy that can be considered before the need for surgery arises and it is our job to make patients aware of them.

## Further reading

### Managing OA

Arthritis Research UK General Practitioners webpage. [http://www.arthritisresearchuk.org/home/general\\_practitioners-1.aspx](http://www.arthritisresearchuk.org/home/general_practitioners-1.aspx).

Prodigy (formerly CKS). Osteoarthritis – Management. <http://prodigy.clarity.co.uk/osteoarthritis>.

Conaghan PG, Dickson J, Grant RL. Care and management of osteoarthritis in adults: summary of NICE guidance. *BMJ* 2008;336(7642):502-3.

De Silva V, El-Metwally A, Ernst E, Lewith G, Macfarlane GJ; Arthritis Research UK Working Group on Complementary and Alternative Medicines. Evidence for the efficacy of complementary and alternative medicines in the management of osteoarthritis: a systematic review. *Rheumatology* (Oxford) 2011;50(5):911-20.

Hurley M. An exercise in knee pain self-management. Reports on the Rheumatic Diseases (Series 5), Hands On 6. Arthritis Research UK; 2005 June.

- Main report: [http://www.arthritisresearchuk.org/files/6526\\_05032010144844.pdf](http://www.arthritisresearchuk.org/files/6526_05032010144844.pdf).
- Information and exercise sheet: [http://www.arthritisresearchuk.org/PDF/6526\\_exercises.pdf](http://www.arthritisresearchuk.org/PDF/6526_exercises.pdf).

Map of Medicine. Osteoarthritis – suspected. <http://eng.mapofmedicine.com/evidence/map/osteoarthritis1.html>.

National Institute for Health and Clinical Excellence (NICE). Osteoarthritis. Clinical Guideline 59. 2008 Feb.

- <http://www.nice.org.uk/cg59>.
- Full guidance: <http://guidance.nice.org.uk/nicemedia/live/11926/39720/39720.pdf>.



National Prescribing Centre (NPC) information on the safety of NSAIDs. [http://www.npc.nhs.uk/merec/pain/musculo/resources/merec\\_extra\\_no30.pdf](http://www.npc.nhs.uk/merec/pain/musculo/resources/merec_extra_no30.pdf).

Wandel S, Jüni P, Tendal B et al. Effects of glucosamine, chondroitin, or placebo in patients with osteoarthritis of hip or knee: network meta-analysis. *BMJ* 2010;341:c4675.

### Shared decision-making

National Prescribing Centre (NPC). Evidence informed decision making 4. Shared decision-making with patients: patient decision aids. NPC; 2010. [http://www.npc.nhs.uk/evidence/eidm4\\_shared/pda.php](http://www.npc.nhs.uk/evidence/eidm4_shared/pda.php).

NHS Direct Patient Decision Aid: Knee arthritis. [https://www.nhsdirect.nhs.uk/DecisionAids/PDAs/PDA\\_KneeArthritis.aspx](https://www.nhsdirect.nhs.uk/DecisionAids/PDAs/PDA_KneeArthritis.aspx).

Rollnick SP, Miller WR, Butler CC. Motivational interviewing in health care: helping patients change behavior. New York: Guilford Press; 2008.

### Background information

Arthritis Care. OA Nation. 2004 April. [http://www.arthritiscare.org.uk/PublicationsandResources/Forhealthprofessionals/OANation/Downloads/main\\_content/OA\\_Nation\\_report.pdf](http://www.arthritiscare.org.uk/PublicationsandResources/Forhealthprofessionals/OANation/Downloads/main_content/OA_Nation_report.pdf).

Birrell F, Howells N, Porcheret M. Osteoarthritis: pathogenesis and prospects for treatment. Reports on the Rheumatic Diseases (Series 6), Topical Reviews 10. Arthritis

Research UK; 2011 Autumn. [www.arthritisresearchuk.org/medical-professional-info](http://www.arthritisresearchuk.org/medical-professional-info).

Dr Chris Cates' EBM Web Site. Cates plot. [http://www.nntonline.net/visualrx/cates\\_plot/](http://www.nntonline.net/visualrx/cates_plot/).

For information on the prevalence of OA: <http://www.keele.ac.uk/pchs/disseminatingourresearch/newslettersandresources/bulletins/bulletin2/>.

### Patient resources

There is plenty of information on OA specifically for patients on the following websites:

- Arthritis Research UK: [www.arthritisresearchuk.org](http://www.arthritisresearchuk.org)
- Arthritis Care: [www.arthritiscare.org.uk](http://www.arthritiscare.org.uk)
- NHS Choices: [www.nhs.uk/Pages/HomePage.aspx](http://www.nhs.uk/Pages/HomePage.aspx)
- Patient UK: [www.patient.co.uk](http://www.patient.co.uk).

### Specific publications:

- British Association for Surgery of the Knee/British Orthopaedic Association. Total knee replacement: a guide for patients. 2007 June. <http://www.boa.ac.uk/en/patient-information/patient-education/total-knee-replacement/>.
- National Institute for Health and Clinical Excellence (NICE). CG59 Osteoarthritis: understanding NICE guidance. London: NICE; 2008 Feb. <http://www.nice.org.uk/nicemedia/pdf/CG59publicinfo.pdf>.

### Continuing professional development (CPD) task

On average in 1 year 2% of all people registered with a practice will consult about OA.\*

- Do a computer search on your GP clinical system to calculate the percentage of patients who had a consultation for osteoarthritis (read codes = N05...) in the last year.
- Discuss with your colleagues what you have found and think about the following:
  - Does the prevalence seem higher or lower than you thought?
  - If lower, are patients not being diagnosed, or are symptom codes (such as 'knee arthralgia') being used instead of disease codes?
  - What sort of care are you providing for this group of patients?

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\* See 'Further reading' for link to information on prevalence of OA.



# Arthritis Research UK funding for osteoarthritis research

Better understanding of the pathophysiology behind OA and a stronger evidence base behind pharmacological and non-pharmacological treatments are leading to a new age of translational, clinical and educational research in OA that will lead to significant patient benefits. Arthritis Research UK is at the forefront of this research. Please see the summaries and links below for more information.

## Our Centres of Excellence

### Pain

Based at the University of Nottingham, the Arthritis Research UK Pain Centre is the world's first national centre for research into understanding the mechanisms of pain in arthritis. [Read more.](#)

### Primary Care

Based at Keele University, the Arthritis Research UK Primary Care Centre is investigating the most effective treatments for musculoskeletal conditions such as OA and back pain and testing new ways of delivering them in everyday clinical practice. [Read more.](#)

### Biomechanics and Bioengineering

Based at Cardiff, the Arthritis Research UK Biomechanics and Bioengineering Centre will promote close collaboration between biomedical scientists, engineers, orthopaedic surgeons, rheumatologists and physiotherapists to gain an understanding of the influence of mechanical loading on the musculoskeletal system. [Read more.](#)

### Tissue Engineering

Led by Newcastle University, the Arthritis Research UK Tissue Engineering Centre is based at four sites across the UK. This major tissue engineering initiative seeks to regenerate bone and cartilage by transplanting stem cells into damaged joints. [Read more.](#)

## Other investments in OA

### Osteoarthritis and Crystal Diseases Clinical Studies Group

This Clinical Studies Group aims to support the development of a portfolio of clinical trials in patients with osteoarthritis and crystal diseases. [Read more.](#)

### Centre of Excellence for Sports Injury and Osteoarthritis Prevention

Arthritis Research UK proposes to establish a collaborative centre for Sports Injury and Osteoarthritis Prevention which will become an international centre of excellence in research into the prevention of osteoarthritis following sports injury. [Read more.](#)

### Experimental Osteoarthritis Treatment Centre

Arthritis Research UK will establish an experimental osteoarthritis treatment centre (EOTC) with the remit to test the role of novel biomechanical interventions for the primary and secondary prevention of osteoarthritis, particularly of the knee. [Read more.](#)

# Patient booklets on osteoarthritis



Arthritis Research UK has recently launched a new range of patient information booklets to provide an ongoing source of information and support for patients with arthritis – people who need high-quality information that is relevant, straightforward and authoritative.

As osteoarthritis is the most common form of joint disease, our booklets '**Osteoarthritis**' and '**Osteoarthritis of the knee**' form a cornerstone of our range. As with all the booklets from Arthritis Research UK, they have been developed using input from medical professionals to meet changing patient needs, offering healthcare professionals a resource they feel confident to share with patients during the consultation. Arthritis Research UK's booklets are:

- **Straightforward** – clear, concise information; an 'at a glance' section for easy reference, making the most important points more digestible, key messages and important points highlighted throughout
- **Relevant** – all information based on the most up-to-date evidence available
- **Authoritative** – the newly written texts have been both medically and lay reviewed
- **Clear** – with colour photography, including pictures of symptoms and 3D illustrations
- **Accessible** – no jargon! An easy-to-understand Q&A format
- **Inclusive** – a 'get involved' page to help patients who can feel isolated.

The information you find in these booklets is rooted in world-class research – some of it funded by Arthritis Research UK – while still keeping the needs of patients, carers and healthcare professionals in mind.

*All of our patient information is available to download as a PDF or can be ordered in hard copy on the Arthritis Research UK website [www.arthritisresearchuk.org](http://www.arthritisresearchuk.org). We offer all of our patient information free of charge.*

## Would you prefer to receive our reports in electronic format?

If you enjoy Hands On, Synovium or Topical Reviews but would prefer to view them electronically you can now opt to receive a free email notification as soon as new issues are published.

In addition, **Topical Reviews** will change to electronic-only distribution after the Summer 2012 issue, so to keep receiving Topical Reviews after this time **you must sign up to our email notification list**. To do this please go to **[www.arthritisresearchuk.org/medical-professional-info](http://www.arthritisresearchuk.org/medical-professional-info)** and follow the link on the right-hand side.

Once you have entered your details you will, at the time of the next issues, receive an email containing links direct to the latest Hands On, Synovium and Topical Reviews, plus a link to the full on-line archive of back issues.

## Postal distribution of Hands On and Synovium

If you are a GP please note that, from Autumn 2011 onwards, our postal distribution of Hands On and Synovium to GPs will take place as inserts with the RCGP's *British Journal of General Practice* (please look out for Arthritis Research UK's logo on the cover sheet of their October/November issue). Other, non-GP, audiences will continue to receive these items via our usual mailing house.

If you **are** a GP and you do not receive the issues by post when you previously have done so, we would like to know – please sign up to our postal mailing list or email notification list to keep receiving your copies (see the link above).

Copeman House, St Mary's Court  
St Mary's Gate, Chesterfield  
Derbyshire S41 7TD

**Tel** 0300 790 0400 **Fax** 01246 558007

**Email** [info@arthritisresearchuk.org](mailto:info@arthritisresearchuk.org)

**[www.arthritisresearchuk.org](http://www.arthritisresearchuk.org)**

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Research UK**

Providing answers today and tomorrow

This issue of Hands On can be downloaded from the Arthritis Research UK website ([www.arthritisresearchuk.org/medical-professional-info](http://www.arthritisresearchuk.org/medical-professional-info) and follow the links).

Hard copies of this and all our other publications are obtainable via the on-line ordering system ([www.arthritisresearchuk.org/order-pubs](http://www.arthritisresearchuk.org/order-pubs)), by email ([arthritisresearchuk@bradshawsdirect.co.uk](mailto:arthritisresearchuk@bradshawsdirect.co.uk)), or from: Arthritis Research UK Trading Ltd, James Nicolson Link, Clifton Moor, York YO30 4XX.

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## **Appendix 7.9 Handout on “What do patients understand by wear and tear?”**

What does “wear and tear” mean to a patient?

- It’s nothing to worry about, it’s a natural process.
- It’s a normal part of the ageing process.
- You’re ageing prematurely
- You’re getting old and you’ve worn something out.
- You’ve torn something, so there’s damage.
- If you carry on using it, it will wear down and get worse.
- If you don’t carry on using it, it will seize up and get worse.
- You don’t have anything to worry about, stop bothering me.
- I don’t have time to treat you.
- I don’t know how to treat you.
- I don’t know if it’s possible to treat you.
- I don’t know what it is.
- I’m not bothered and neither should you be
- There’s nothing we can do.

**Appendix 7.10 National Rheumatoid Arthritis Society – Have you got the  
S Factor leaflet**



## Have you got The S Factor?

**Stiffness - Early morning joint stiffness lasting more than 30 minutes**

**Swelling - Persistent swelling of one joint or more, especially hand joints**

**Squeezing - Squeezing the joints is painful in inflammatory arthritis**



The S-factor poster is part of a public awareness campaign launched in a series of broadcast interviews by Dr Hilary Jones on the 10th November 2011. The campaign was developed by the Rheumatology Futures Project Group(RFPG)\* (scroll to bottom of page for details), NRAS and the Arthritis Research UK and endorsed and supported by the Royal College of GPs and The Primary Care Rheumatology Society.

If you have any symptoms highlighted in the poster which might possibly relate to rheumatoid arthritis, then seek help from your GP, don't delay!

If you are willing to take one of these posters to display in your GP surgery, your library, local pharmacy or any other public place, please download the poster to print off or please contact us and we'll send you some.

Please also watch the NRAS Video about Early Diagnosis - a quick diagnosis can make a real difference.

### The Inflammatory Arthritis Patient Information Pathway

To go alongside the launch of the S-Factor campaign, NRAS and Arthritis Research UK have continued the work done by the Rheumatology Futures Group to publish an Inflammatory Arthritis Patient Pathway. Inflammatory Arthritis (IA) is the term used to describe a range of conditions – including the 3 most common forms of inflammatory arthritis, Rheumatoid Arthritis, Ankylosing Spondylitis and Psoriatic Arthritis, which affect the immune system. Described as 'autoimmune diseases', they each have their own characteristics and can strike at any age. However, what these diseases have in common is that the body's immune system is wrongly triggered to attack your own body, causing pain, stiffness, damage to joints and, if left untreated, possibly disability. They are systemic diseases which means that they can affect the whole body and even internal organs such as the lungs, heart and eyes, although this is certainly not the case for everyone.

There is no cure of these diseases, but managed well, people diagnosed today can expect to lead relatively normal lives. For more information about these diseases, click on the links below and elsewhere on this website! There are six steps on the pathway, as shown below, which is followed by a list of the organisations

that can help with information about any of the steps on the pathway.

- Step 1 Recognising symptoms before seeking help
- Step 2 Visiting the GP for the first time
- Step 3 Seeing the specialist for the first time following referral
- Step 4 Tests, treatments and information
- Step 5 On-going care
- Step 6 Long term disease and complications

To visit the NRAS Inflammatory Arthritis Patient Information Pathway please [click here](#)

## Organisations who can help

### Arthritis Care

Arthritis Care exists to support people with all forms of arthritis. They are the UK's largest charity working with and for all people who have arthritis. Arthritis Care campaigns for change and offers practical support and information so that people can learn to take control of their arthritis and make positive changes to their lives. Helpline: 0808 800 4050 General enquiries: 020 7380 6500

Email: [Info@arthritiscare.org.uk](mailto:Info@arthritiscare.org.uk)

Website: [www.arthritiscare.org.uk](http://www.arthritiscare.org.uk)

### Arthritis Research UK

Arthritis Research UK is the charity leading the fight against arthritis by funding high class research, providing information and campaigning. Phone: 01246 558033

Email: [Enquiries@arthritisresearchuk.org](mailto:Enquiries@arthritisresearchuk.org)

Website: [www.arthritisresearchuk.org](http://www.arthritisresearchuk.org)

### Birmingham Arthritis Resource Centre

BARC promote 'self care' and 'self-management', supporting people with chronic and painful arthritis and musculoskeletal conditions to cope with their problems through information provided in a variety of forms and aimed at the multi-cultural society that makes up Birmingham. Phone: Tel: 0121 464 2708

Email: [info@bham.ac.uk](mailto:info@bham.ac.uk)

Website: [www.barc.org.uk](http://www.barc.org.uk)

### National Rheumatoid Arthritis Society (NRAS)

National Rheumatoid Arthritis Society is the only charity which focuses specifically on providing support, help and information for people with rheumatoid arthritis and juvenile idiopathic arthritis, their families, friends and carers, and health professionals with an interest in rheumatoid arthritis. NRAS have groups and volunteers across the UK, and offer matched peer support. Helpline: 0800 298 7650 General enquiries: 0845 458 3969 / 01628 823524

Email: [Enquiries@nras.org.uk](mailto:Enquiries@nras.org.uk)

Website: [www.nras.org.uk](http://www.nras.org.uk)

### National Ankylosing Spondylitis Society (NASS)

NASS is the only registered charity in the UK working exclusively for people with AS and their families. Phone: 020 8948 9117

Email: [Admin@nass.co.uk](mailto:Admin@nass.co.uk)

Website: [www.nass.co.uk](http://www.nass.co.uk)

## The Psoriasis Association

The Psoriasis Association is the leading national membership organisation for people affected by psoriasis - patients, families, carers and health professionals. Phone: 08456 760 076

Email: [Mail@psoriasis-association.org.uk](mailto:Mail@psoriasis-association.org.uk)

Website: [www.psoriasis-association.org.uk](http://www.psoriasis-association.org.uk)

## What is RA?

Rheumatoid arthritis (RA) is a chronic, progressive and disabling auto-immune disease affecting approximately 690,000 people in the UK adult population.

It is a disease in which the immune system attacks the tissue within the joint, leaving it painful and inflamed. If left untreated, the joint can lose its shape and alignment, and can eventually become unstable and ultimately, completely destroyed.

It is a painful condition, and can lead to disability (this varies between individuals and depends on how severe/aggressive the disease is) and ultimately can affect a person's ability to carry out activities of daily living.

The disease can progress very rapidly (again the speed of progression varies widely between individuals) or more slowly, causing swelling and damaging cartilage and bone around the joints.

Any joint may be affected but it is commonly the hands, feet and wrists. It is a systemic disease which means that it doesn't just affect joints, it can affect the whole body and internal organs (although this is not the case for everyone with RA) such as the lungs, heart and eyes.

It affects approximately three times more women than men and onset is generally between 40 - 60 years of age although it can occur at any age. There are around 15,000 children under the age of 16 with the juvenile form of the disease. We do not know what causes it although various ideas include environmental triggers such as virus, infection, stress, trauma have been suggested. Cigarette smoking is an important precipitating factor.

Furthermore, smoking makes the outlook for the RA worse. So far, we cannot cure it, but we now understand much more about the inflammatory process and how to manage it. RA is a lot more common than leukaemia and multiple sclerosis.

However, because RA and its effects are not well publicised, awareness of the severity of the condition tends to be restricted to those who are directly affected or their carers and relatives.

The good news is that the prognosis today, if diagnosed and treated early, is significantly better than it was 20-30 years ago and many people have a much better quality of life in spite of having RA.

RA is economically costly. In fact the economic burden of RA in terms of loss of productivity amounts to £8 billion<sup>1</sup>. We now know that uncontrolled RA increases mortality through an increased risk of cardiovascular disease such as heart attacks and strokes; again the need for early treatment is imperative.

### Reference:

1. National Rheumatoid Arthritis Society, Economic Burden of RA Report, 2010

## \*The Rheumatology Futures Project Group (RFPG)

The RFPG was a coalition of patient and professional organisations representing the entire rheumatology community (primary care, hospital care, consultants, GPs, nurses and allied health professionals, patient organisations) and the pharmaceutical industry.

The RFPG was specifically formed in 2007 to develop and execute a collaborative and clearly-defined programme of work to identify barriers to providing high-quality rheumatology services for people with rheumatoid arthritis (RA) across England, and to explore what high quality care should look like and how it



could be delivered and was limited to a three year, time limited project which ended summer 2010.

If this information has helped you, please help us by [making a donation](#). Thank you.

## **Appendix 7.11 Dieppe editorial on referral for joint replacement**

# Osteoarthritis and Cartilage

## Editorial

### Who should have a joint replacement? A plea for more 'phronesis'

Recently I met up with my old friend Eddie, whom I had not seen for over a year.

"How have you been?" I asked

"I've just had my hip replaced" he responded

"Oh, I didn't realise you had been having hip pain"

"No, no, it was never painful" Eddie explained "Just slowing me up a bit and interfering with the long walks I like to take, and with my cricket on a Sunday. And apparently the X-ray showed it was bad, so I thought I would get it done"

"Are you pleased with it?"

"Yes, it's great" he enthused "I can do anything I want to again, and I scored a half century last Sunday"

Should he have had a hip replacement I wondered? Who should? The answer seems to be both beguilingly simple and fiendishly complex.

In this edition of the journal there is an article by Laure Gossec and colleagues<sup>1</sup> describing a large multi-national study which tried to find cut-off levels of pain and disability that correspond to an indication for total hip or knee joint replacement. They failed to find any cut-point, there being a huge overlap in levels of pain and function recorded in those who were recommended for surgery, compared with those who were not. Obviously. Previous studies have shown that there is a huge variation in the levels of pain and disability experienced by people coming to total joint replacement<sup>2–4</sup>, with some, like my friend Eddie, seemingly having very little wrong with them.

As part of a programme of work on joint replacement, we conducted qualitative studies investigating the views of patients and the public on who should have a joint replacement<sup>5–8</sup>. The answers they gave were often seemingly very simple – "those who are going to benefit most from the surgery", for example. So, it is quite easy then – we operate on those who are going to get the most benefit – the answer is '*capacity to benefit*' (see below). But how are we to assess what the likely improvement is going to be, and how do we cope with people like Eddie (who says he benefited greatly)? This is particularly difficult as there is a notable absence of good data on the determinants of good or bad outcomes after joint replacement<sup>9</sup>.

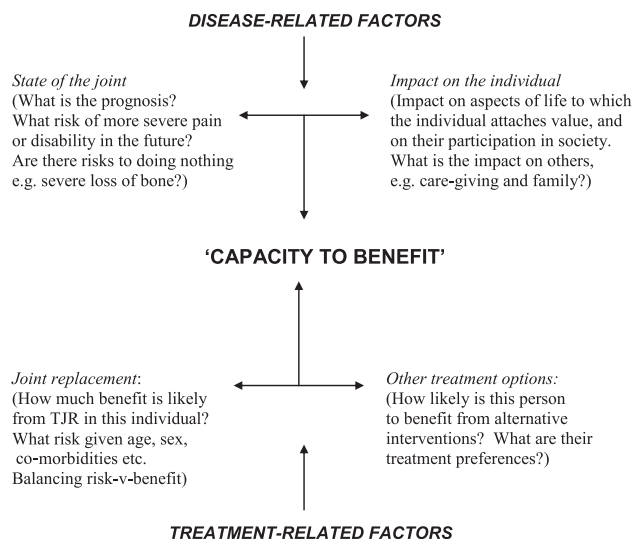
More detailed analysis of what the patients and the public told us revealed some further, fascinating perspectives. For example, some people held the view that it should depend on the length of time that someone had put up with pain and disability in the past (the 'area-under-the-curve' of pain and disability), rather than reported severity of symptoms at the time of decision making. That is an interesting and quite sophisticated viewpoint I think, as it relates to issues such as a short-lasting 'flare-up' of symptoms leading to an ill-judged decision to have surgery, and of the

problem that a patient who wants the surgery, for whatever reason, can generally get it by saying he or she has awful night pain just now. Many people told us that they thought it wrong that some other people were able to get a joint replacement by 'shouting a lot'<sup>7</sup>. They also told us that those who were caring for someone else at home should have priority, even if their symptoms were not very severe. This is another interesting perspective, raising the whole area of social circumstances, which takes us way beyond the narrow focus of Gossec *et al.* on severity of pain and disability, along with X-ray changes. How often do we ask about the caring role of our patients, and have you ever seen this mentioned in the plethora of consensus statements<sup>10–12</sup> that emerge from the professionals about the indications and prioritisation of joint replacement? Probably not. Work or care-giving is mentioned in the Canadian prioritisation criteria<sup>12</sup>, but care provision is not mentioned in most of the other documents and publications on who should have a joint replacement.

But patients and the public were also aware of, and concerned about the dangers of joint replacement, and the fact that not everyone gets better<sup>6</sup>. Based on these perspectives, and other research on joint replacement we have tried to develop the public's concept of '*capacity to benefit*' further, so that it can be used as a framework for decision making about joint replacement surgery<sup>13</sup>, an approach that we based firmly within a biopsychosocial framework<sup>14</sup> (Fig. 1).

The decision whether to have a joint replacement or not is, of course, a judgment call that has to be made by the physician and patient working together, and which has to take account of a large range of complex psychological, social and other issues, in addition to pain, disability and X-ray changes. That is obvious enough, although how to operationalise it is not. And that, of course, is the art of medicine, and why humanity is just as important as science in medicine.

The Greeks (particularly Aristotle) wrote about the importance of 'phronesis' (practical wisdom) in health care<sup>15</sup>. It takes wisdom and experience, as well as scientific data, to make the right decision with people about whether they should undergo a major intervention like a joint replacement. It cannot be done with a 'cook-book' approach, or simply by measuring things such as pain, which are immeasurable anyway. And with respect to my friends and colleagues who contributed to the paper in this journal (and I too must share in some of the blame), I think we need more phronesis in our research as well. The study reported<sup>1</sup> must have involved a lot of time and money and was a big undertaking; furthermore, it seems that it was driven, as so much of the research we do is these days, by the agenda of the pharmaceutical industry rather than a patient-related question. Surely there should have been more



**Fig. 1.** A framework for the application of the public's 'capacity to benefit' concept to decision making about total joint replacement.

reflection on the wisdom of such an undertaking. If we had listened more to what the patients and the public were telling us, and to folk like my friend Eddie before undertaking this research, we would surely have re-formulated the questions. The data that we need is on what determines good and bad outcomes after joint replacement.

#### Conflicts of interest

None.

#### Acknowledgments

I would like to thank my friend Eddie May, of Kuwait days, for all sorts of things, including humour, bridge, cricket, and of course, his hip. The work described was funded by the UK Medical Research Council and by Arthritis Research UK.

#### References

- Gossec L, Paternotte S, Maillefert JF, Combescure C, Conaghan PG, Davis AM, *et al.* The role of pain and functional impairment in the decision to recommend total joint replacement in hip and knee osteoarthritis: an international cross-sectional study of 1909 patients. Report of the OARSI-OMERACT Task Force on total joint replacement. *Osteoarthritis and Cartilage* 2011;19: 147–54.
- Kennedy GL, Newman JH, Ackroyd C, Dieppe PA. When should we do a knee replacement? *Knee* 2003;10:161–6.
- Dieppe P, Judge A, Williams S, Ikwueke I, Gunther K-P, Hawker G, *et al.* Variation in the pre-operative status of patients coming to primary hip replacement for osteoarthritis in European orthopaedic centres. *BMC Musculoskelet Disord* 2009;10:19.
- Ackerman IN, Dieppe PA, March LM, Roos EM, Nilsdotter AK, Brown GC, *et al.* Variation in age and physical status prior to total knee and hip replacement surgery: a comparison of centres in Australia and Europe. *Arthritis Rheum* 2009;61:166–73.
- Woolhead GM, Donovan JL, Chard JA, Dieppe PA. Who should have priority for a knee joint replacement? *Rheumatology* 2002;41:390–4.
- Sanders C, Donovan JL, Dieppe PA. Unmet need for joint replacement: a qualitative investigation of barriers to treatment among individuals with severe pain and disability of the hip and knee. *Rheumatology* 2004;43:353–7.
- Woolhead GM, Donovan JL, Dieppe PA. Outcomes of total joint replacement: a qualitative study. *Rheumatology* 2005;44: 1032–7.
- Sansom A, Donvan J, Sanders C, Dieppe P, Horwood J, Learmonth I, *et al.* Routes to total joint replacement surgery: patients' and clinicians' perspectives of need. *Arthritis Care Res* 2010;62.
- Judge A, Cooper C, Williams S, Dreinhoefer K, Dieppe P. Patient-reported outcomes one year after primary hip replacement in a European Collaborative Cohort. *Arthritis Care Res* 2010;62:480–8.
- NIH consensus conference. Total hip replacement. *JAMA* 1995; 273:1950–6.
- Hadorn DC, Homes AC. The New Zealand priority criteria project. *Br Med J* 1997;314:131–4.
- Naylor CD, Williams JL. Primary hip and knee replacement surgery: Ontario criteria for case selection and surgical priority. *Qual Health Care* 1996;5:20–30.
- Dieppe P, Dixon D, Horwood J, Pollard B, Johnston M. Mobile and the provision of total joint replacement. *J Health Serv Res Policy* 2008;13(Suppl 3):47–56.
- Engel GL. The need for a new medical model: a challenge for biomedicine. *Science* 1997;196:129–36.
- Aristotle. *Nicomachean Ethics*. Dual text with a translation by H Rachman. Harvard University Press; 1934.

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## Appendix 7.12 Handout on making the diagnosis of rheumatoid arthritis

# Making a Diagnosis of Rheumatoid Arthritis

Dr John Dickson, Dr Peter Lanyon, Dr Elspeth Wise, Primary Care Rheumatology Society

### Common symptoms of rheumatoid arthritis (RA):

- Stiffness in the joints, particularly in the morning. Typically this affects the hands and feet, and is symmetrical, but often the dominant hand is more severely affected
- Swollen, painful joints (called synovitis). The joints are soft and boggy, quite different from the square, hard, bony swelling of osteoarthritis (OA). The swelling is due to an inflamed joint membrane (the synovial lining). There may be fluid in the joint (an effusion).
- Fatigue; most people have little energy, feel ill and often describe flu-like symptoms.
- The most important pointer to the diagnosis is RAPID LOSS OF FUNCTION. People with RA find buttons and bra straps are very difficult to fasten and they frequently drop cups or other household items.

When the disease starts suddenly, with involvement of the hands, feet or large joints, the diagnosis is usually made rapidly. However, many people have symptoms that may be flitting and transient before becoming permanent, with a general feeling of non-specific illness (flu-like), depression and lethargy. These latter symptoms may be obvious to both the patient and doctor, but the additional joint symptoms may not have triggered the possible diagnosis of RA and the correct response of referral to secondary care. This situation can be a diagnostic challenge for GPs, as laboratory tests can be normal in the early stages of disease.

### What conditions may be confused with RA?

#### **Fibromyalgia**

People with this condition often feel pain "all over", in all their muscles and joints, and have multiple tender points when examined. Although there may be a degree of early morning stiffness in fibromyalgia, unlike RA, it usually lasts no more than 30 minutes. Poor unrestorative sleep is invariably present, with associated fatigue and low mood, and often there are associated symptoms of headaches and irritable bowels and bladder. It is important to distinguish this condition from rheumatoid arthritis, although sometimes both conditions are present.

#### **Polymyalgia Rheumatica (PMR)**

This condition causes pain and stiffness of the shoulders and thighs and tends to occur in people over 65 years of age. Sometimes elderly people with RA present with similar symptoms, and the correct diagnosis of RA usually becomes apparent when the patient is unable to reduce the steroid dosage below 10mg.

#### **Post-viral arthritis**

Acute, post-infective, self-limiting arthritis can follow influenza and other viral illness, particularly parvovirus. It may be extremely painful with swollen ankles, wrists or knees. This usually resolves over several weeks or months. A clue may be that other family members or friends were also affected by symptoms of a viral infection around the same time.

#### **Osteoarthritis**

Osteoarthritis (OA) is the most common type of joint disease, and often affects the hands. It occurs more frequently in women than men, and often starts around or just after the time of the menopause. Hands affected by OA usually have small lumps (nodes) on either side of the finger joints, most commonly found at the ends of the fingers, near to the finger nails (called Heberden's nodes). The base of the thumb is also frequently affected. OA hands usually function quite well, even though they may look unsightly i.e. look larger, squarer and have hard lumps. Osteoarthritis can usually be distinguished from rheumatoid arthritis, although some people can suffer from both types of arthritis.

## Appendix 7.13 Patient reported outcome measures for hip and knee arthroplasty

### 1. Mobility

I have no problems in walking about  
I have some problems in walking about  
I am confined to bed

### 2. Self-care

I have no problems with self-care  
I have some problems washing and dressing myself  
I am unable to wash or dress myself

### 3. Usual activities (e.g. work, study, housework, family or leisure activities)

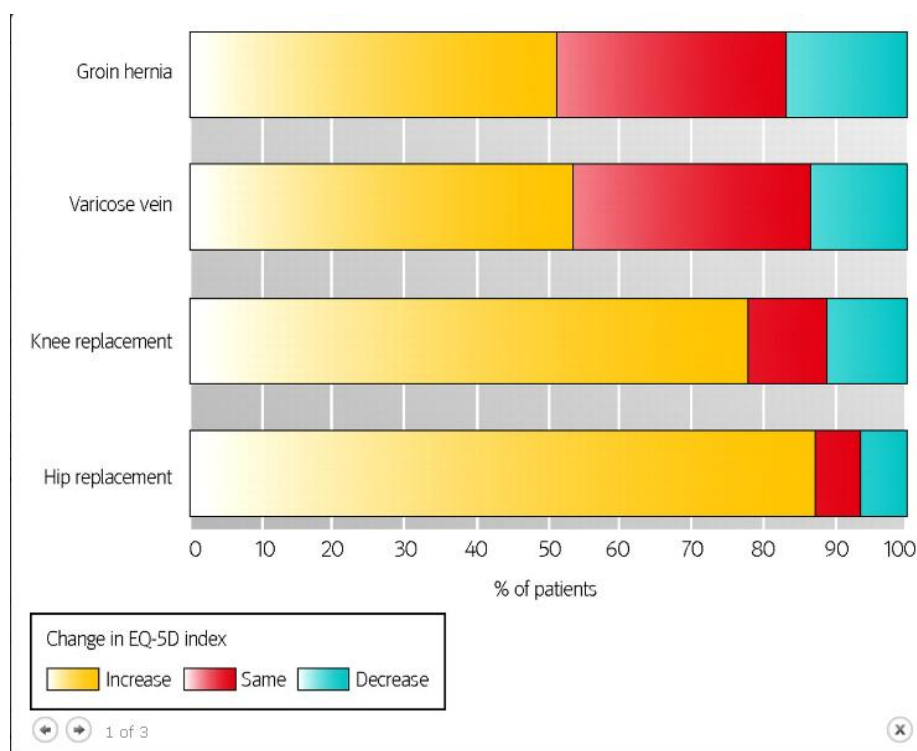
I have no problems with performing my usual activities  
I have some problems with performing my usual activities  
I am unable to perform my usual activities

### 4. Pain / discomfort

I have no pain or discomfort  
I have moderate pain or discomfort  
I have extreme pain or discomfort

### 5. Anxiety / depression

I am not anxious or depressed  
I am moderately anxious or depressed  
I am extremely anxious or depressed



Change in health related quality of life after an operation 2009-10

## **Appendix 7.14 Handout on “OA as a repair process”**

### **OA as a repair process**

Osteoarthritis is a metabolically active, dynamic process that involves all joint tissues (cartilage, bone, synovium/capsule, ligaments and muscle). Key pathological changes include localised loss of articular (hyaline) cartilage and remodelling of adjacent bone with new bone formation (osteophyte) at the joint margins. This combination of tissue loss and new tissue synthesis supports the view of osteoarthritis as the *repair process* of synovial joints. A variety of joint traumas may trigger the need to repair, but once initiated all the joint tissues take part, showing increased cell activity and new tissue production. In general, osteoarthritis is a slow but efficient repair process that often compensates for the initial trauma, resulting in a structurally altered but symptom-free joint. In some people, however, either because of overwhelming insult or compromised repair potential, the osteoarthritis process cannot compensate, resulting in continuing tissue damage and eventual presentation with symptomatic osteoarthritis or ‘joint failure’. This explains the extreme variability in clinical presentation and outcome, both between individuals and at different joint sites. The specific targeting of osteoarthritis for certain joints remains unexplained, but one hypothesis suggests an evolutionary fault where joints that have most recently altered are biomechanically under-designed and thus more often fail.

From page 5 - National Collaborating Centre for Chronic Conditions. *Osteoarthritis: national clinical guideline for care and management in adults*. London: Royal College of Physicians, 2008.

## **Appendix 7.15 Aide-memoire for model OA consultation (version 1)**

### **1. Make the diagnosis**

- a. Understand the patient's agenda
  - i. The presenting complaint (the story)
  - ii. Pain and mobility
  - iii. Work, hobbies, activities
  - iv. **I**deas and **C**oncerns about the problem **E**xpectations of the consultation
  - v. What already tried and how effective
- b. Examine the joint(s)
- c. Typical osteoarthritis history (chronic peripheral joint pain worse with use in over 45s)
- d. Red flags / alternative diagnosis unlikely (see over)

### **2. Give the diagnosis**

- a. Tailored to ideas and concerns about the problem

### **3. Explain the diagnosis**

- a. Elicit patients ideas / knowledge / beliefs about OA
- b. Give explanation tailored to above

### **4. Provide analgesia advice / prescription**

- a. Check for need if not already elicited
- b. Advice on "menu of options" (see over) and negotiate management plan

### **5. Promote self-management for osteoarthritis**

- a. Affirm what already tried
- b. Brief advice tailored to what already tried

### **6. Promote support for self-management for osteoarthritis**

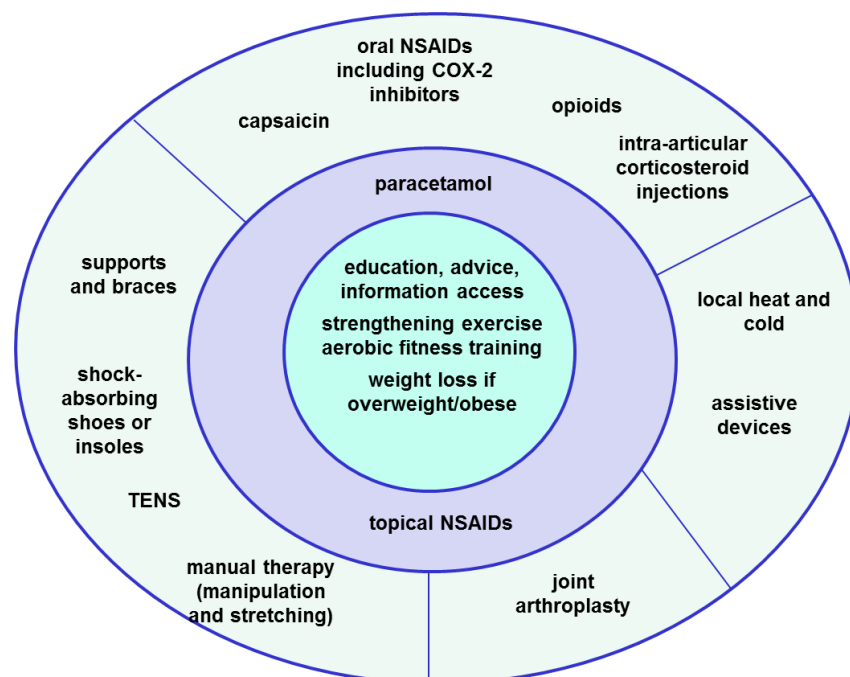
- a. Address expectations of the consultation
- b. Promote / offer Osteoarthritis Guidebook and OA clinic appointment

### **7. End the consultation**

- a. Summarise management plan (including nurse led clinic appointment)
- b. Check for understanding
- c. Safety netting if required
- d. Arrange OA clinic appointment



Alternative diagnoses to be excluded at hip and knee (from OA Hands On 2011)	
<p>Both <u>hip and knee</u></p> <ul style="list-style-type: none"> <li>● Red flags <ul style="list-style-type: none"> <li>● Fracture</li> <li>● Sepsis</li> <li>● Cancer</li> </ul> </li> <li>● Referred pain <ul style="list-style-type: none"> <li>● To the hip from the back</li> <li>● To the knee from the hip</li> </ul> </li> <li>● Bursitis</li> <li>● Fibromyalgia</li> </ul>	<p><u>Knee only</u></p> <ul style="list-style-type: none"> <li>● Inflammatory arthritis</li> <li>● (Pseudo) gout</li> <li>● Meniscal disease</li> </ul> <p><u>Hip only</u></p> <ul style="list-style-type: none"> <li>● Polymyalgia rheumatica</li> <li>● Avascular necrosis of the femoral head</li> <li>● Meralgia paraesthetica (entrapment of the lateral cutaneous nerve of <u>the</u> thigh)</li> </ul>



**Treatments for OA** Starting at the centre and working outwards, the treatments are arranged in the order in which they should be considered, taking into account individuals' different needs, risk factors, and preferences. The core treatments (centre) should be considered first for every person with osteoarthritis. If further treatment is required, consider the drugs in the second circle before the drugs in the outer circle. The outer circle also shows adjunctive treatments (both non-pharmacological and surgical), which have less well proved efficacy, provide less symptom relief, or increased risk to the patient compared with those in the second circle.

## **Appendix 7.16 Final model OA consultation aide memoire**

## THE CONSULTATION

1. Make, give and explain the diagnosis	Ask about <b>I</b> deas
2. Address expectations	<b>C</b> oncerns
3. Offer the OA Guidebook and clinic	<b>E</b> xpectations

## THE DIFFERENTIAL DIAGNOSIS

Alternative diagnoses to be excluded at hip and knee (from OA Hands On 2011)

### Both hip and knee

- Red flags
  - Fracture
  - Sepsis
  - Cancer
- Referred pain
  - To the hip from the back
  - To the knee from the hip
- Bursitis
- Fibromyalgia

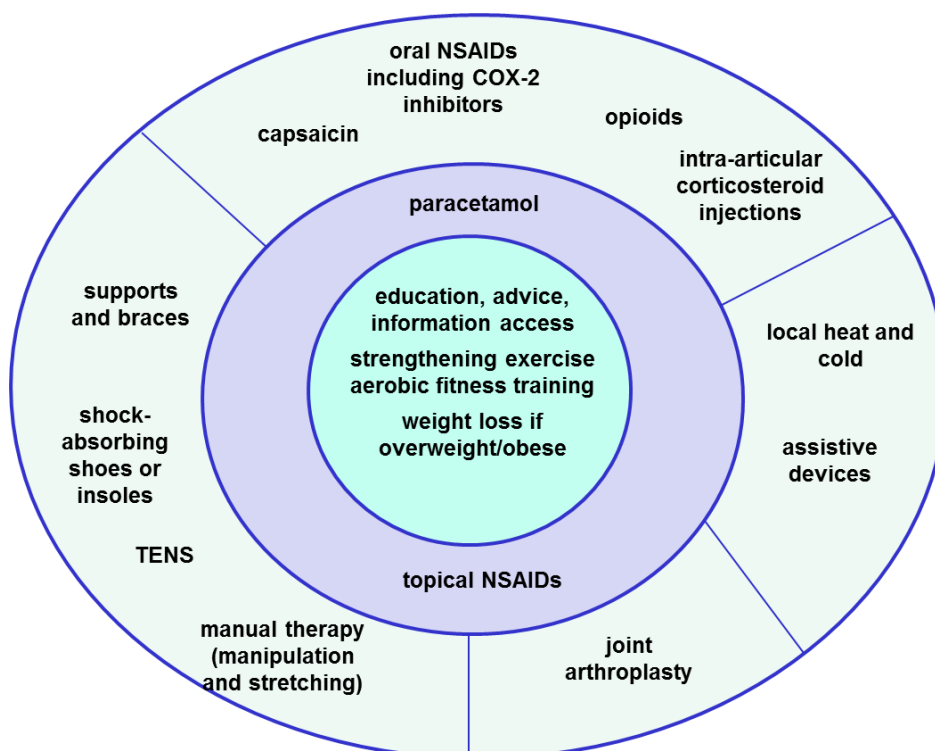
### Knee only

- Inflammatory arthritis
- (Pseudo) gout
- Meniscal disease

### Hip only

- Polymyalgia rheumatica
- Avascular necrosis of the femoral head
- Meralgia paraesthetica (entrapment lateral cutaneous nerve thigh)

## THE MENU OF OPTIONS



PTO for OA Clinic details

# The OA Clinic

## Key features

- A first appointment of 30 minutes followed by up to three 20 minute appointments with a specially trained nurse
- Help with understanding OA and its treatments
- Support to help reduce pain, improve getting about and doing things
- Advice if needed on
  - Exercises to help strengthen muscles
  - Getting more active
  - The use of painkillers
  - Where to get help to lose weight

## **Appendix 7.17 Workshop training manual**

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## Training sessions for intervention practices v5

### Training team

Mark Porcheret (MP)  
Chris Main (CM)  
Vince Cooper (VC)  
Zoe Paskins (ZP)  
Krysia Dziedzic (KD)  
Chan Vahora (CV)  
June Handy (JH)

### Workshop timings, activities and resources

Shown by workshop below.

<b>Briefing session – Single practice team (1 hour) - practice manager and as many GPs and nurses as possible</b>			
<b>Time</b>	<b>Activity</b>	<b>Resources</b>	<b>Note</b>
5 mins	Researchers introduce themselves and the team	MP, AG, CV, KD if available	
25 mins	Re-orientate practice to study, reveal randomisation, overview of intervention and training, information about collecting case histories, simulated patient videos, training dates, SLA, indemnity, payments, Sentinel Practice Scheme	MP, written information on training dates and case histories left with practice OA leaflet pack left (ARUK and AC leaflets – NICE OA Guideline – ARUK OA Hands On)	
10mins	Any questions	MP, KD, AG, CV	
15 mins	Feedback of template use	KD	
5 mins	Any questions	MP, JH, CV	

<b>Workshop 1 – Single practice team (2 hours, or with optional break 2h 20min)</b> <b>GPs, PNs, PM, receptionists, Keele research nurses working in practice, research team</b>			
<b>Time</b>	<b>Activity</b>	<b>Resources</b>	<b>Note</b>
5 mins	Researchers introduce themselves briefly – personal info Practice members introduce themselves and their practice	MP, CM, KD if available – need at least two people to deliver this	1
20mins	<b>How does it present, and is managed, in your practice?</b> Mapping practice resources – practice services, community and other primary care services, secondary care services PCT restrictions, referral pathways	Flip chart to note resources and issues One of team to act as facilitator One to record	
30 mins	<b>Setting the scene presentation:</b> 1. Definition, prevalence, pathology, prognosis, chronic pain and patient experience of OA – impact on their lives	MP and audio or video clips of OA RUG members using transcripts from qualitative interview	2
10 mins	<b>Introduction to the New Approach</b> Why being researched NICE OA Guideline (handed out) Guided self-management / support for self-management OA Guidebook (handed out to all with request to read) MOAC-1/2 intervention with details of consultation objectives Questions and discussion	MP (and KD if available) NICE OA Guideline OA Guidebook	
20 mins	<b>Break (if time) – non-clinical staff end session here</b>		



20 mins	<b>Group discussion</b> Presentation and discussion of case histories (at least one from a GP and one from a PN) Difficulties in managing OA - what do they want out of the sessions (to get the win-win in the training sessions 2 and 3) difficulties in present care arrangements – referrals etc Specific areas the GPs and/or PNs want to cover Identify areas of difficulty in managing OA as anticipated in MOSAICS (lack of knowledge/skills), which can be addressed in next sessions What would make life easier for them in managing OA	MP and one other Flip chart One to lead and facilitate One to record, probe, clarify etc and record on flip chart	
30 mins	<b>How to deliver MOAC-1 – the study intervention</b> The study's needs for a standardised intervention Summary of MOAC-1 consensus exercise The need for GPs to learn how to deliver it to suit their consulting style The goals of MOAC-1 – Key Tasks and Skills	MP ARUK OA Hands On MOAC-1 aide memoire v1	
10 mins	<b>Conclusions and plans for sessions 2 and 3</b> Outline of 2 <sup>nd</sup> and 3 <sup>rd</sup> training session GPs given video of SPV1 consultation for individual use (unseen by trainers) Asked to reflect on this video in light of MOAC-1 task sheet – how are they going to deliver MOAC-1 – identify their learning needs Bring ideas to 2 <sup>nd</sup> training session Encourage participants to read the OA Guidebook Thanks to practice and valuing today's input	MP DVD of SPV1 consultation	

	Remind GPs they will be sharing reflection with 2 <sup>nd</sup> practice team at next session		
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**Training Session 1 Facilitator Notes****Note 1**

Getting participants relaxed and ready to talk:

Keep team introductions brief and personal

Encourage practice team to talk about themselves, their practice and the patient population.

**Note 2**

Short didactic session and aim for interactive as well

<b>Workshop 2 – GPs from 2 practices (2½ hours)</b>			
<b>Time</b>	<b>Activity</b>	<b>Resources</b>	<b>Note</b>
10 mins	<b>Introductions</b> Practices introduce themselves to each other Reflections on training session 1 Unanswered questions from training session 1	MP, CM, VC, SP (and possibly CV) One of team to facilitate One to record notes	
20 mins	<b>Reflection on SPV1 video consultation</b> (query send out email reminder re looking at SPV1 if long gap between session 1 and 2) How did the GPs get on - in relation to the MOAC-1 task? Use modified Pendleton approach - what went well then what not so well Set agenda for skills training - what areas we are going to work on	MP, CM, VC Get GPs to refer to (hopefully completed) task sheets for analysis of SPV1 Flip chart One to facilitate group discussion One to capture info on easy/difficult bits etc	
20 mins	<b>Introduction to working interactively with SPs</b> Description of purpose and methods Demo by one of us Deal with any questions, doubts, reservations	MP, CM, VC Possibly video clip of us with SP in training Possibly a couple of slides SP with a simple scenario One to facilitate SP/GP demo One to be consulting GP One to facilitate group questions/discussion	
10 mins	<b>Break</b>		

70 mins	<b>Skills session</b> Working on small chunks of consultation with SP and a facilitated group Work through agenda from reflection on SPV1 session Produce revised MOAC-1 aide memoire (will include suggested patten for consultation, for example when, giving / explaining the diagnosis)	MP, CM, VC Simulated patient (SPA) with straightforward scenario One of team to facilitate (rotate?) One to take notes	
20 mins	<b>Wrap up session</b> Reflection - how did it go / did it feel real Agree revised aide memoire and send out Any other points / issues Preparation for SPV2 video - Drs to view video privately with aide memoire and bring comments to training session 3 Planning training session 3 - upping the difficulty. GPs to identify some of the difficulties to work on - which dictates role for SPs	MP, CM, VC One to lead and facilitate One to record, probe, clarify etc  Send out revised aide memoire	

<b>Workshop 3 – GPs from 2 practices (3hours 15mins)</b>			
<b>Time</b>	<b>Activity</b>	<b>Resources</b>	<b>Note</b>
40 mins	<b>Knowledge update(s)</b> Addressing needs identified in training session 1 Making the clinical diagnosis of OA - especially site specific Top tips for managing OA - detailed presentation on options for treatment and how to use - especially site specific NICE credibility, real world practice, the “agreement” session,	MP, ZP, CM Slides, flip chart?	
20 mins	<b>Reflection on SPV2 video consultation</b> How did GPs get on with aide memoire from first training session Set agenda for skills training	MP, CM, VC Flip chart One to facilitate group discussion One to capture info	
15 mins	<b>Break</b>		
60 mins	<b>Skills session 2</b> Working on small chunks of consultation with SP and a facilitated group	MP, CM, VC Simulated patient C with more challenging scenario One of team to facilitate One to take notes	
30 mins	<b>Wrap up session</b> General reflection – satisfaction questionnaires – invite GPs to agree to be contacted for brief semi-structured interview Agreement on final aide memoire Briefing for SPV3 video – for private reflection and interim evaluation Inform time of 4th training session - putting it into action	MP, CM, VC One to lead and facilitate One to record, probe, clarify etc	
30 mins	<b>NPT session</b>	PO	

	<p>Group interview post-training.</p> <ul style="list-style-type: none"><li>• Does the new intervention differ from their current practice (or knowledge)? If so, in what way? If not, why not?</li><li>• What do you feel is the main purpose of the new intervention?</li><li>• Are you clear as what is expected from you when delivering the new intervention? If not, explain what is unclear.</li><li>• Do you feel that the new intervention is worthwhile? If so, why? If not, explain what you consider as problematic?</li><li>• Do you think you can adopt the new intervention in practice? With or without any modifications?</li></ul>		
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<b>Workshop 4 – Single practice team (1 hour)</b>			
<b>Time</b>	<b>Activity</b>	<b>Resources</b>	<b>Note</b>
15 mins	<b>Putting it all together</b> Achieving MOAC-1 goals Delivering it in everyday practice	MP, VC,	
15 mins	<b>Developing and adapting aide-memoir – final version</b>	MP, VC (Slides or flip chart)	
10 mins	<b>Templates in the consultation</b>	MP (Slides to illustrate)	
10 mins	<b>Preparation for SPV3 and SPV4 video consultations – interim and final evaluation video</b>	MP	
5 mins	<b>Questions or any issues</b>	MP, VC	
5 mins	<b>Certificate for portfolio</b>	MP, Pre-prepared certificates	

## Appendix 8.1 Supplementary tables and boxes

GP	Before workshops	One month after workshops	5 months after workshops
10	yes	yes	yes
48	yes	yes	yes
56	yes	yes	no
46	yes	no	no
45	yes	yes	yes
44	yes	yes	yes
43	yes	no	no
41	yes	yes	yes
40	yes	yes	yes
38	yes	no	yes
37	yes	yes	yes
36	yes	no	yes
35	yes	yes	yes
34	yes	yes	yes
33	yes	yes	yes
32	yes	no	no
31	yes	yes	yes
29	yes	yes	yes
28	yes	yes	yes
27	yes	yes	yes
26	yes	yes	yes
25	yes	yes	no
24	yes	yes	yes
60	no	yes	no
59	yes	no	yes
<b>Total number videos</b>	24	22	19

Supplementary table 8.1 GPs with a video and total number of videos by time-point



GP	Duration of video in minutes		
	Baseline	1 month after workshops	5 months after workshops
41	22.22	18.85	26.93
24	15.23	13.78	18.05
34	9.42	10.83	15.18
45	10.07	15.37	13.25
33	14.33	11.73	13.18
37	16.12	13.75	16.83
40	14.32	12.65	21.33
28	10.63	11.32	12.95
10	22.72	22.57	19.75
35	17.87	11.68	13.27
31	8.80	10.92	10.53
29	17.45	8.92	8.80
48	12.48	16.68	11.07
26	11.60	9.23	11.87
44	16.32	15.18	14.53
Mean (standard deviation)	14.64 (4.15)	13.56 (3.58)	15.17 (4.58)
Range	8.80 to 22.72	8.92 to 22.57	8.80 to 26.93

Supplementary table 8.2 - Duration of videos by GP by time-point

GP	GP competency score		
	Baseline	1 month after workshops	5 months after workshops
41	7	9	11
24	8	11	11
34	5	12	10
45	6	12	11
33	8	10	7
37	10	13	12
40	5	12	11
28	7	10	11
10	11	14	13
35	8	10	11
31	5	11	10
29	9	9	11
48	5	11	9
26	10	10	10
44	5	8	10

Supplementary table 8.3 GP competency score by GP by time-point

GP	Presence (1) or absence (0) of task		
	Baseline	1 month after workshops	5 months after workshops
41	1	0	1
24	1	1	1
34	0	0	0
45	1	1	1
33	0	0	0
37	1	1	1
40	1	1	1
28	0	0	0
10	0	1	1
35	1	0	1
31	1	0	0
29	1	0	1
48	1	1	1
26	1	0	0
44	0	0	0

Supplementary table 8.4 - Individual GP delivery of giving the diagnosis using the word "osteoarthritis" by time-point

Diagnosis given or not given and if given (words / phrases used)			
GP	Baseline	1 month after workshops	5 months after workshops
41		Given (arthritis)	
34	Given (arthritis)	Given (arthritis)	Given (arthritis)
33	Given (wear and tear, arthritis)	Given (arthritis)	Given (arthritis, wear and tear arthritis)
28	Given (arthritis)	Given (arthritis, arthritic hip)	Given (wear and tear, degeneration, arthritis, arthritic joint)
10	Given (arthritis)		
35		Given (arthritis)	
31		Not given	Given (arthritis)
29		Given (arthritis)	
26		Not given	Given (arthritis)
44	Not given	Not given	Given (wear and tear)

Supplementary table 8.5 – Further assessment of the 20 videos in which the tasks of “giving the diagnosis with the use of the word “osteoarthritis”” not delivered

		Number (%) GPs with response				
		Baseline (n=20)	Baseline non- responders (n=11) <sup>a</sup>	Baseline responders (n=9) <sup>b</sup>	1 month (n=9)	5 months (n=8)
This patient's symptoms are:	severe or very severe	0	0	0	0	0
	moderate	15 (75)	9 (81)	6 (67)	6 (67)	6 (75)
	mild or very mild	5 (25)	2 (18)	3 (33)	3 (33)	2 (25)
Symptoms are due to joint damage which is:	severe or very severe	0	0	0	0	0
	moderate	7 (35)	4 (36)	3 (33)	2 (22)	4 (50)
	mild or very mild	13 (65)	7 (63)	6 (67)	7 (78)	4 (50)
Investigations ordered	none	7 (35)	6 (54)	1 (11)	7 (78)	6 (75)
	knee x-ray	11 (55)	5 (46)	6 (67)	0	1 (13)
	lab test	2 (10)	0	2 (22)	2 (22)	1 (13)
Treatments used						
Core	education and verbal advice	19 (95)	10 (91)	9 (100)	9 (100)	6 (75)
	written information given	11 (55)	7 (63)	4 (44)	9 (100)	8 (100)
	increase activity level	9 (45)	3 (27)	6 (67)	6 (67)	5 (63)
	general physical activity	14 (70)	7 (63)	7 (78)	6 (67)	5 (63)
	strengthening exercise	19 (95)	10 (91)	9 (100)	9 (100)	6 (75)
	weight loss	20 (100)	11 (100)	9 (100)	9 (100)	7 (88)
1 <sup>st</sup> line analgesia	topical NSAIDs <sup>c</sup>	11 (55)	7 (63)	4 (44)	8 (89)	7 (88)
	paracetamol	18 (90)	10 (90)	8 (89)	9 (100)	8 (100)
Adjunct treatments	heat / ice	6 (30)	3 (27)	3 (33)	5 (56)	3 (38)
	assistive devices	1 (5)	0	1 (11)	0	0
	shoes / insoles	6 (30)	2 (18)	4 (44)	4 (44)	3 (38)
	joint supports	2 (10)	0	2 (22)	1 (11)	0
	capsaicin	0	0	0	1 (11)	1 (13)
	oral NSAIDs	10 (50)	7 (63)	3 (33)	5 (56)	2 (25)
	TENS <sup>d</sup>	0	0	0	0	0
	intra-articular steroids	0	0	0	0	0
	opioid analgesics	1 (5)	1 (9)	0	0	0
Other treatments	pacing of activities	4 (20)	1 (9)	3 (33)	1 (11)	1 (13)
	avoidance painful movement / activity	0	0	0	0	0
	rest	0	0	0	0	0
	reducing activity level	0	0	0	0	0
	nutrition	3 (15)	1 (9)	2 (22)	0	1 (13)
	other	1 (5)	0	1 (11)	0	2 (25)
Referral	physiotherapist	1 (5)	0	1 (11)	1 (11)	1 (13)
	occupational therapist	0	0	0	0	0
	dietician	0	0	0	2 (22)	1 (13)
	GPwSI <sup>e</sup>	1 (5)	1 (9)	0	0	0
	exercise on prescription	1 (5)	1 (9)	0	2 (22)	1 (13)
	other	0	0	0	5 <sup>f</sup> (56)	2 <sup>g</sup> (26)

a – non-responders at 1 month

b - responders at 1 month

c - nonsteroidal anti-inflammatory drug

d – transcutaneous electrical nerve stimulation

e – GP with a special interest

f – all “other” responses were for a referral to a nurse-led OA clinic

Supplementary table 8.6 Grading of symptoms and treatment of problem for scenario at baseline, one month and five months after workshops

GP study ID	Baseline (n=20)	1 month after workshops (n=9)	5 months after workshops (n=8)
10	early degenerative changes / meniscal damage	OA	mild osteoarthritis
23	mild / mod OA knees	-	-
24	probably wear and tear of the knees (OA)	likely to be "wear and tear" i.e. osteoarthritis	likely osteoarthritis of the knee
25	possible early OA patella-femoral joints	-	-
27	OA	-	degenerative changes, obesity
29	likely osteoarthritis	OA	-
30	reactive arthritis	-	-
31	OA of knees	OA of knees	osteoarthritis
32	knee pain, possible OA	-	-
33	wear and tear	-	-
34	arthritis	osteoarthritis	-
35	bilateral early osteoarthritis knees	bilateral osteoarthritis of knees	osteoarthritis of both knees
36	likely OA knees	-	-
37	osteoarthritis	-	-
40	knee pain right greater than left	osteoarthritis	osteoarthritis of knees
41	mild-moderate OA right knee	osteoarthritis	moderate osteoarthritis
43	possible OA, knee pain made worse by weight	-	-
45	osteoarthritis	-	OA
46	arthralgia	likely OA	-
48	likely osteoarthritis	-	-

Supplementary table 8.7 Free text response to “what diagnosis would you give the patient” at baseline and one and five months after workshops

GP study ID	Baseline (n=20)	1 month after workshops (n=9)	5 months after workshops (n=8)
10	4	1	1
23	1	-	-
24	1	1	1
25	1	-	-
27	1	-	4
29	1	1	-
30	2	-	-
31	1	1	1
32	1	-	-
33	4	-	-
34	2	1	-
35	1	1	1
36	1	-	-
37	1	-	-
40	3	1	1
41	1	1	1
43	1	-	-
45	1	-	1
46	3	1	-
48	1	-	-

Supplementary table 8.7a Free text response categories <sup>a</sup> for diagnosis given at baseline and one and five months after workshops

a – Categories were, the diagnosis given:

1. As OA or osteoarthritis
2. As Arthritis (unspecified or other than OA)
3. As a symptom based diagnosis (knee pain / arthralgia)
4. In descriptive terms (early degenerative changes / meniscal damage, wear and tear).

GP study ID	Baseline (n=20)	1 month after workshops (n=9)	5 months after workshops (n=8)
10	patient has chronic bilateral knee pain which is unrelated to daily activities but worse on climbing stairs and bending gardening. over weight. Painkillers only PRN. Examination essentially normal except slight decreased flexion. No evidence of inflammatory arthritis no other joint involved	you are suffering from mild osteoarthritis in knee which is a degenerative condition associated with wear and repair and pain relief continuing with weight reduction, physio and activities will improve the condition.	you have mild osteoarthritis which is causing pain and some difficulty with activity. It is a process (gradual) of wear and repair.
23	wear and tear changes in knees	-	-
24	probable wear and tear arthritis of the knees	with age, and use of joints over time they get slightly worn. It happens to nearly everyone, some people are affected more than others. The joints then get a bit stiff & sore & sometimes swollen and then can settle again.	an age related condition often associated with use the joint all time, wear and tear, flare and repair, so sometimes it will be worse than allows
25	wear and tear changes in the joint, mostly behind the knee cap. Not severe, unlikely to limit mobility permanently	-	-
27	degenerative joint - wear and tear will be controlled	-	signs of wear and tear. Nothing worrying and should respond to treatment
29	wear and tear of articular surface, become roughened	wear & tear	-
30	as a result of functional wear and tear	-	-
31	wear and tear of the knee joints, or mild arthritis of the knee joints	OA wear, tear and repair process attending both knees - chronic; relapsing and remitting condition.	natural process seen as a result of using that joint, where the joint is trying to mend itself
32	maybe a sign of wear and tear, a natural process of gradual degeneration of the shock absorber that is the knee joint	-	-
33	wear and tear, whole body weight going through knees	-	-
34	I feel you have arthritis in your knees. This is a very common condition associated with inflammation and stiffness	there is some inflammation in your joints which has come about from arthritis which is the wear and tear in the joint secondary to the load put through your joints with use over the years & strain of weight	-



GP study ID	Baseline (n=20)	1 month after workshops (n=9)	5 months after workshops (n=8)
35	examination shows evidence of early wear and tear arthritis. We will need an x-ray to confirm this	some evidence of wear and tear arthritis on his knees which we can improve.	there is evidence of early wear and tear changes on your knee joints which we will be able to improve with careful management
36	wear and tear to cartilage of knees	-	-
37	suggest evidence of wear and tear. If patient pushes for further explanation - explain cartilage as soft pads on end of bones, worn down	-	-
40	probably early arthritis will get an x-ray to see if there any signs on it. The x-ray findings do not necessary correlate to the degree of pain gently exercise is to be encouraged - leaflet given	you are getting signs of osteoarthritis which is classified. We need to keep you as mobile and pain free as possible.	your symptoms tell me that you have osteoarthritis in your knees. We need to look after it my medications and exercise. Id like you to see my nurse in the osteoarthritis clinic
41	wear and tear osteoarthritis of knee joint	simple wear & tear of the joint, though we now know this is actually wear & repair of the joint.	you have osteoarthritis. This is a wear and repair in the knees, that needs to be improved
43	possibly some wear and tear has caused pain, knees under more strain due to carrying extra weight	-	-
45	wear and tear in the knee joint	-	wear and tear in the joint
46	chronic pain requiring investigation and further management	wear and tear type arthritis but can undergo repair	-
48	you are likely to have a condition called osteoarthritis which is wear and tear of your joint which is what is giving your joint pain and restricting your activity and mobility to an extent. It is likely to set worse over time. It is possible it may affect other joints as well.	-	-

Supplementary table 8.8 Free text response to “Using the words you would use with the patient, briefly state how would you describe your diagnosis to the patient”, at baseline and one and five months after workshops

<b>GP study ID</b>	<b>Baseline (n=20)</b>	<b>1 month after workshops (n=9)</b>	<b>5 months after workshops (n=8)</b>
10	3	2	2.
23	1	-	-
24	1	5	1
25	1	-	-
27	2	-	2
29	1	1	-
30	1	-	-
31	1	1	2
32	1	-	-
33	1	-	-
34	3	1	-
35	1	2	2
36	1	-	-
37	1	-	-
40	4	3	3
41	1	2	2
43	1	-	-
45	1	-	1
46	3	2	-
48	1	-	-

Supplementary table 8.8a Free text response categories <sup>a</sup> for description of diagnosis at baseline and one and five months after workshops

a – Categories were, a description focussing on:

1. Negative statements (including “wear and tear” or “degeneration”)
2. Positive statements (including “repair”, “improve”, “mend”, “respond” or those referring to control or treatment) on their own or to accompany or modify statements included in category “1”
3. Symptoms and signs of the diagnosis (which can include mention of inflammation),
4. X-ray findings
5. Relationship of diagnosis to increasing age and ubiquity of diagnosis in older people

GP study ID	Baseline (n=20)	1 month after workshops (n=9)	5 months after workshops (n=8)
10	reasonably good prognosis	if we continue with weight reduction exercise and physio and arrange for you to see an OA specialist nurse. We are confident your symptoms / condition will improve significantly.	if you continue to keep active with daily exercises and reduce weight and with painkillers like ibuprofen oral or gel the symptoms will improve and condition will improve
23	condition may come and go, need for weight loss / right approach to mitigate problems	-	-
24	need to make sure you keep active and try to lose some weight and use some pain relief otherwise your knees will feel more painful and walking will get more difficult as you get older	it is important that you use mild painkillers regularly & use the joints, keep moving and do exercise otherwise the stiffness and pain is likely to get worse.	it is important that you use adequate pain relief, so I would suggest regular paracetamol up to 4 x a day. It is important you use the joint so knee exercise to strengthen joint are essential otherwise the situation will deteriorate
25	with appropriate treatment, should be able to relieve symptoms	-	-
27	good	-	a positive future important that they ensure outcome is good by taking good advice. Must implement action plan themselves
29	if you can build up strength in muscles to support joints, pain should ease and prevent deterioration	with exercise should repair & be able to return to normal activities	-
30	gradual deterioration / controlled by analgesia	-	-
31	that the joint symptoms can improve with simple measures such that can continue to work	"flare ups" joint symptoms worsen due to wear and then repair. Likely to grumble on, may potentially worsen	the joints would not necessarily deteriorate providing he continued to strengthen and exercise the joints / muscles
32	pain may come and go but can be managed and modified so that he can live a full and active life	-	-
33	possibly likely to deteriorate but could expect improvement with weight loss	-	-
34	arthritis does tend to persist with flare ups but by exercising and losing weight we can decrease the severity and use simple pain killers to keep you mobilising well	with pain control & use of anti-inflammatories we can decrease your pain, increasing you mobility which will decrease the inflammation & stiffness, allowing you to lose weight & regain some of your normal life.	-

GP study ID	Baseline (n=20)	1 month after workshops (n=9)	5 months after workshops (n=8)
35	I feel we can help with your pain exercise can really help with joint pain as the stronger muscles are around the joint the more stable and pain free the joint can be. You may need to take more regular analgesia, to help you to restart exercising regularly	we can improve your pain and ability to climb stairs/ work by adding in regular pain relief to enable him to increase regular exercise and improve muscle strength in order to stabilise the knee joint and reduce the pain in the long term.	I feel we could improve your symptoms by addressing a few factors that might be making your knee pain worse such as adequate pain relief, exercise and weight loss
36	may worsen over time but highly likely to effectively treat symptoms with appropriate 1) analgesia +/- 2) exercise +/- 3) physio	-	-
37	positive, most people cope well, function well, encourage staying active	-	-
40	cannot tell if it will get worse or the same unpredictable from patient to patient	one day you might need complicated things such as steroid injection or knee operations but we want to keep as far away as possible by looking after the arthritis proactively.	in the future you may need surgery to the knees but we are going to do what we can to avoid this
41	gradually get worse with time	the condition can be greatly improved by some simple measures	the osteoarthritis can stabilise and your symptoms improve if we can follow a simple but regular regime of exercise / weight loss / painkiller etc
43	important to keep active, helps to reduce weight and therefore reduce pressure on knees, may involve better / more regular pain relief	-	-
45	difficult to predict the future progression variable progression in different people	-	symptoms can be treated by a variety of methods such as painkillers, physiotherapy, injections
46	with increasing analgesia / exercise likely good outcome	likely that with physio / nurse advice at clinic that current levels of pain and disability can be improved.	-
48	it is a chronic condition which is likely to progress but this can be showed by changes to lifestyle / weight management and other measures	-	-

Supplementary table 8.9 Free text response to “Using the words you would use with the patient, briefly describe what the future is likely to hold for this patient”, at baseline and one and five months after workshops

<b>GP study ID</b>	<b>Baseline (n=20)</b>	<b>1 month after workshops (n=9)</b>	<b>5 months after workshops (n=8)</b>
10	1	2	2
23	4	-	-
24	6	6	6
25	2	-	-
27	1	-	2
29	2	2	-
30	6	-	-
31	2	5	4
32	2	-	-
33	6	-	-
34	4	2	-
35	2	2	2
36	6	-	-
37	1	-	-
40	3	6	6
41	5	2	2
43	4	-	-
45	3	-	4
46	2	2	-
48	6	-	-

Supplementary table 8.9a Free text response categories <sup>a</sup> for “what the future is likely to hold for this patient”, at baseline and one and five months after workshops

a Categories were, the response gives a:

7. Good prognosis
8. Good prognosis contingent on treatment
9. Neutral / uncertain prognosis
10. Neutral / uncertain prognosis mitigated by treatment
11. Poor prognosis
12. Poor prognosis mitigated by treatment

Item	Number (%) GPs with response				
	Baseline (n=20)	Baseline non- responders (n=11) <sup>a</sup>	Baseline responders (n=9) <sup>b</sup>	1 month (n=9)	5 months (n=8)
How much have you heard or read about the NICE Osteoarthritis Guideline, published in 2008?					
1 nothing at all	1 (5)	0	1 (11)	0	0
2	4 (20)	2 (18)	2 (22)	0	0
3 some	14 (70)	8 (73)	6 (67)	2 (22)	1 (13)
4	1 (5)	1 (9)	0	3 (33)	2 (25)
5 a lot	0	0	0	4 (44)	5 (63)
How much do you feel that NICE is a credible source of guidance for the management of osteoarthritis?					
1 not a lot	1 (5)	0	1 (11)	0	0
2	0	0	0	0	1 (13)
3 somewhat	13 (65)	7 (64)	6 (67)	3 (33)	0
4	6 (30)	4 (36)	2 (22)	4 (44)	6 (75)
5 a lot	0	0	0	2 (22)	1 (13)

a - non-responders at 1 month b - responders at 1 month

Supplementary table 8.10 All response categories on GP awareness of, and attitude to, NICE 2008 OA Guideline at baseline and one and five months after workshops

Item	Number (%) GPs with response				
	Baseline (n=20)	Baseline non- responders (n=11) <sup>a</sup>	Baseline responders (n=9) <sup>b</sup>	1 month (n=9)	5 months (n=8)
How much have you heard or read about the NICE Osteoarthritis Guideline, published in 2008?					
1 - 4	20 (100)	11 (100)	9 (100)	5 (56)	3 (37)
5	0	0	0	4 (44)	5 (63)
How much do you feel that NICE is a credible source of guidance for the management of osteoarthritis?					
1 - 4	20 (100)	11 (100)	9 (100)	7 (78)	7 (88)
5	0	0	0	2 (22)	1 (12)

a - non-responders at 1 month

b - responders at 1 month

Supplementary table 8.10a Dichotomised responses on GP awareness of, and attitude to, NICE 2008 OA Guideline at baseline and one and five months after workshops

	Number (%) GPs with response				
	Baseline (n=20)	Baseline non- responders (n=11) <sup>a</sup>	Baseline responders (n=9) <sup>b</sup>	1 month (n=9)	5 months (n=8)
How much have you heard or read about the recommendation that healthcare professionals should support patients with OA to self-manage their condition?					
1 nothing at all	1 (5)	0	1 (11)	0	0
2	1 (5)	0	1 (11)	0	1 (13)
3 some	11 (55)	6 (55)	5 (56)	2 (22)	2 (25)
4	6 (30)	4 (36)	2 (22)	1 (11)	2 (25)
5 a lot	1 (5)	1 (9)	0	6 (67)	3 (37)
Do you agree with this recommendation?					
1 completely disagree	0	0	0	0	0
2	1 (5)	0	1 (11)	0	0
3 somewhat agree	7 (35)	3 (27)	4 (44)	1 (11)	2 (25)
4	8 (40)	6 (55)	2 (22)	2 (22)	4 (50)
5 completely agree	4 (20)	2 (18)	2 (22)	6 (67)	2 (25)
Do you provide support for patients with osteoarthritis to self-manage their condition?					
1 never	0	0	0	0	0
2	2 (10)	1 (9)	1 (11)	0	0
3 about half the time	9 (45)	5 (46)	4 (44)	2 (22)	0
4	8 (40)	5 (46)	3 (33)	4 (44)	4 (50)
5 always	1 (5)	0	1 (11)	3 (33)	4 (50)

a - non-responders at 1 month

b - responders at 1 month

Supplementary table 8.11 All response categories on GP awareness of, agreement with and adoption of the recommendation on provision of self-management support, at baseline and one and five months

	Number (%) GPs with response				
	Baseline (n=20)	Baseline non- responders (n=11) <sup>a</sup>	Baseline responders (n=9) <sup>b</sup>	1 month (n=9)	5 months (n=8)
How much have you heard or read about the recommendation that healthcare professionals should support patients with OA to self-manage their condition?					
1 - 4	19 (95)	10 (91)	9 (100)	3 (33)	5 (63)
5	1 (5)	1 (9)	0	6 (67)	3 (37)
Do you agree with this recommendation?					
1 -4	16 (80)	9 (82)	7 (78)	3 (33)	6 (75)
5	4 (20)	2 (18)	2 (22)	6 (67)	2 (25)
Do you provide support for patients with osteoarthritis to self-manage their condition?					
1 never	19 (95)	11 (100)	8(89)	6 (67)	4 (50)
5 always	1 (5)	0	1 (11)	3 (33)	4 (50)

a - non-responders at 1 month

b - responders at 1 month

Supplementary table 8.11a Dichotomised response on GP awareness of, agreement with and adoption of the recommendation on provision of self-management support, at baseline and one and five months



	Number (%) GPs with response				
	Baseline (n=20)	Baseline non- responders (n=11) <sup>a</sup>	Baseline responders (n=9) <sup>b</sup>	1 month (n=9)	5 months (n=8)
How much have you heard or read about the recommendation that healthcare professionals should offer all patients with OA written information about their condition?					
1 nothing at all	6 (30)	1 (9)	5 (56)	0	0
2	0	0	0	1 (11)	2 (25)
3 some	12 (60)	8 (73)	4 (44)	1 (11)	1 (13)
4	2 (10)	2 (18)	0	4 (44)	2 (25)
5 a lot	0	0	0	3 (33)	3 (37)
Do you agree with this recommendation?					
1 completely disagree	1 (5)	0	1 (11)	0	0
2	2 (10)	0	2 (22)	0	0
3 somewhat agree	10 (50)	6 (55)	4 (44)	3 (33)	3 (37)
4	5 (25)	3 (27)	2 (22)	2 (22)	1 (13)
5 completely agree	2 (10)	2 (18)	0	4 (44)	4 (50)
Do you provide written information for patients with OA?					
1 never	1 (5)	0	1 (11)	0	0
2	7 (35)	1 (9)	6 (67)	0	0
3 about half the time	7 (35)	6 (55)	1 (11)	3 (33)	2 (25)
4	5 (25)	4 (36)	1 (11)	5 (56)	3 (37)
5 always	0	0	0	1 (11)	3 (37)

a - non-responders at 1 month

b - responders at 1 month

Supplementary table 8.12 All response categories on GP awareness of, agreement with and adoption of the recommendation on provision of written information, at baseline and one and five months

	Number (%) GPs with response				
	Baseline (n=20)	Baseline non- responders (n=11) <sup>a</sup>	Baseline responders (n=9) <sup>b</sup>	1 month (n=9)	5 months (n=8)
How much have you heard or read about the recommendation that healthcare professionals should offer all patients with OA written information about their condition?					
1 - 4	20 (100)	11 (100)	9 (100)	6 (67)	5 (63)
5	0	0	0	3 (33)	3 (37)
Do you agree with this recommendation?					
1 - 4	18 (90)	9 (82)	9 (100)	5 (56)	4 (50)
5	2 (10)	2 (18)	0	4 (44)	4 (50)
Do you provide written information for patients with OA?					
1 - 4	20 (100)	11 (100)	9 (100)	8 (89)	5 (63)
5	0	0	0	1 (11)	3 (37)

a - non-responders at 1 month

b - responders at 1 month

Supplementary table 8.12a Dichotomised responses on GP awareness of, agreement with and adoption of the recommendation on provision of written information, at baseline and one and five months

	Number (%) GPs with response				
	Baseline (n=20)	Baseline non- responders (n=11) <sup>a</sup>	Baseline responders (n=9) <sup>b</sup>	1 month (n=9)	5 months (n=8)
How much have you heard or read about the recommendation that healthcare professionals should offer all patients with OA advice on exercise and increasing physical activity?					
1 nothing at all	2 (10)	1 (9)	1 (11)	0	0
2	3 (15)	1 (9)	2 (22)	0	0
3 some	6 (30)	4 (36)	2 (22)	3 (33)	1 (13)
4	3 (15)	2 (18)	1 (11)	1 (11)	3 (38)
5 a lot	6 (30)	3 (27)	3 (33)	5 (56)	4 (50)
Do you agree with this recommendation?					
1 completely disagree	0	0	0	0	0
2	0	0	0	0	0
3 somewhat agree	8 (40)	5 (46)	3 (33)	0	2 (25)
4	4 (20)	3 (27)	1 (11)	4 (44)	2 (25)
5 completely agree	8 (40)	3 (27)	5 (56)	5 (56)	4 (50)
Do you offer advice on exercise and increasing physical activity to patients with OA?					
1 never	0	0	0	0	0
2	1 (5)	0	1 (11)	0	0
3 about half the time	6 (30)	3 (27)	3 (33)	2 (22)	1 (13)
4	8 (40)	6 (55)	2 (22)	3 (33)	2 (25)
5 always	5 (25)	2 (18)	3 (33)	4 (44)	5 (63)

a - non-responders at 1 month

b - responders at 1 month

Supplementary table 8.13 All response categories on GP awareness of, agreement with and adoption of the recommendation on provision of written information, at baseline and one and five months

	Number (%) GPs with response				
	Baseline (n=20)	Baseline non- responders (n=11) <sup>a</sup>	Baseline responders (n=9) <sup>b</sup>	1 month (n=9)	5 months (n=8)
How much have you heard or read about the recommendation that healthcare professionals should offer all patients with OA advice on exercise and increasing physical activity?					
1 - 4	14 (70)	8 (73)	6 (67)	4 (44)	4 (50)
5	6 (30)	3 (27)	3 (33)	5 (56)	4 (50)
Do you agree with this recommendation?					
1 - 4	12 (60)	8 (73)	4 (44)	4 (44)	4 (50)
5	8 (40)	3 (27)	5 (56)	5 (56)	4 (50)
Do you offer advice on exercise and increasing physical activity to patients with OA?					
1 - 4	15 (75)	9 (82)	6 (67)	5 (56)	3 (37)
5	5 (25)	2 (18)	3 (33)	4 (44)	5 (63)

a - non-responders at 1 month

b - responders at 1 month

Supplementary table 8.13a Dichotomised response on GP awareness of, agreement with and adoption of the recommendation on provision of written information, at baseline and one and five months

	Number (%) GPs with response				
	Baseline (n=20)	Baseline non- responders (n=11) <sup>a</sup>	Baseline responders (n=9) <sup>b</sup>	1 month (n=9)	5 months (n=8)
How much have you heard or read about the recommendation that healthcare professionals should offer all patients with OA, if they are overweight or obese, advice on interventions to achieve weight loss?					
1 nothing at all	1 (5)	0	1 (11)	0	0
2	0	0	0	0	0
3 some	9 (45)	4 (36)	5 (56)	0	0
4	5 (25)	3 (27)	2 (22)	2 (22)	5 (63)
5 a lot	5 (25)	4 (36)	1 (11)	7 (78)	3 (37)
Do you agree with this recommendation?					
1 completely disagree	0	0	0	0	0
2	0	0	0	0	0
3 somewhat agree	4 (20)	1 (8)	3 (33)	1 (11)	0
4	9 (45)	6 (54)	3 (33)	2 (22)	3 (37)
5 completely agree	7 (35)	4 (36)	3 (33)	6 (67)	5 (63)
Do you offer advice on interventions to achieve weight loss to patients with OA, if they are overweight or obese?					
1 never	0	0	0	0	0
2	0	0	0	0	0
3 about half the time	6 (30)	2 (18)	4 (44)	1 (11)	2 (25)
4	9 (45)	7 (64)	2 (22)	3 (33)	3 (37)
5 always	5 (25)	2 (18)	3 (33)	5 (56)	3 (37)

a - non-responders at 1 month

b - responders at 1 month

Supplementary table 8.14 All response categories on GP awareness of, agreement with and adoption of the recommendation on provision of advice on weight loss, at baseline and one and five months

	Number (%) GPs with response				
	Baseline (n=20)	Baseline non- responders (n=11) <sup>a</sup>	Baseline responders (n=9) <sup>b</sup>	1 month (n=9)	5 months (n=8)
How much have you heard or read about the recommendation that healthcare professionals should offer all patients with OA, if they are overweight or obese, advice on interventions to achieve weight loss?					
1 - 4	15 (75)	7 (64)	8 (89)	2 (22)	5 (63)
5	5 (25)	4 (36)	1 (11)	7 (78)	3 (37)
Do you agree with this recommendation?					
1 - 4	13 (65)	7 (64)	6 (67)	3 (33)	3 (37)
5	7 (35)	4 (36)	3 (33)	6 (67)	5 (63)
Do you offer advice on interventions to achieve weight loss to patients with OA, if they are overweight or obese?					
1 - 4	15 (75)	9 (82)	6 (67)	4 (44)	5 (63)
5	5 (25)	2 (18)	3 (33)	5 (56)	3 (37)

a - non-responders at 1 month

b - responders at 1 month

Supplementary table 8.14a Dichotomised response on GP awareness of, agreement with and adoption of the recommendation on provision of advice on weight loss, at baseline and one and five months

How well informed do you feel about:		Number (%) GPs with response				
		Baseline (n=19) <sup>1</sup>	Baseline non- responders (n=10) <sup>1, 2</sup>	Baseline responders (n=9) <sup>3</sup>	1 month (n=9)	5 months (n=8)
Cause OA	1 not at all	0	0	0	0	0
	2	0	0	0	0	0
	3 partly	9 (47.4)	3 (30.0)	6 (66.6)	2 (22.2)	0
	4	8 (42.1)	5 (50.0)	3 (33.3)	4 (44.4)	6 (75.0)
	5 very well	2 (10.5)	2 (20.0)	0	3 (33.3)	2 (25.0)
Prognosis OA	1 not at all	0	0	0	0	0
	2	0	0	0	0	0
	3 partly	9 (47.4)	4 (40.0)	5 (55.5)	1 (11.1)	0
	4	8 (42.1)	4 (40.0)	4 (44.4)	5 (55.6)	5 (62.5)
	5 very well	2 (10.5)	2 (20.0)	0	3 (33.3)	3 (37.5)
Burden OA	1 not at all	0	0	0	0	0
	2	0	0	0	0	0
	3 partly	6 (31.6)	2 (20.0)	4 (44.4)	2 (22.2)	0
	4	9 (47.4)	5 (50.0)	4 (44.4)	3 (33.3)	6 (75.0)
	5 very well	4 (21.1)	3 (30.0)	1 (11.1)	4 (44.4)	2 (25.0)
OA treatments	1 not at all	0	0	0	0	0
	2	0	0	0	0	0
	3 partly	3 (15.8)	2 (20.0)	1 (11.1)	0	0
	4	14 (73.7)	6 (60.0)	8 (88.8)	4 (44.4)	2 (25.0)
	5 very well	2 (10.5)	2 (20.0)	0	5 (55.6)	6 (75.0)
OA self-management	1 not at all	0	0	0	0	0
	2	1 (5.3)	0	1 (11.1)	0	0
	3 partly	6 (31.6)	3 (30.0)	3 (33.3)	1 (11.1)	0
	4	10 (52.6)	6 (60.0)	4 (44.4)	3 (33.3)	3 (37.5)
	5 very well	2 (10.5)	1 (10.0)	1 (11.1)	5 (55.5)	5 (62.5)
GP support OA self-management	1 not at all	0	0	0	0	0
	2	1 (5.3)	0	1 (11.1)	0	0
	3 partly	6 (31.6)	4 (40.0)	2 (22.2)	1 (11.1)	0
	4	11 (57.9)	5 (50.0)	6 (66.6)	1 (11.1)	3 (37.5)
	5 very well	1 (5.3)	1 (10.0)	0	7 (77.8)	5 (62.5)

1 – missing data for 1 GP at baseline

2 - non-responders at 1 month

3 - responders at 1 month

Supplementary table 8.15 GP knowledge of OA and its management at baseline and one and five months after workshops

	Number (%) GPs with response				
	Baseline (n=20)	Baseline non- responders (n=11) <sup>1</sup>	Baseline responders (n=9) <sup>2</sup>	1 month (n=9)	5 months (n=8)
How much do you feel it is part of a GP's job to manage people with OA?					
1 not at all	0	0	0	0	0
2	0	0	0	0	0
3 somewhat	4 (20.0)	1 (9.1)	3 (33.3)	1 (11.1)	0
4	8 (40.0)	7 (63.6)	1 (11.1)	3 (33.3)	3 (37.5)
5 a lot	8 (40.0)	3 (27.3)	5 (55.5)	5 (55.5)	5 (62.5)
How much is managing patients with OA a priority for you?					
1 not a priority	0	0	0	0	0
2	1 (5.0)	0	1 (11.1)	0	0
3 medium	6 (30.0)	2 (18.2)	4 (44.4)	3 (33.3)	2 (25.0)
4	10 (50.0)	7 (63.6)	3 (33.3)	5 (55.5)	4 (50.0)
5 high priority	3 (15.0)	2 (18.2)	1 (11.1)	1 (11.1)	2 (25.0)
Do you have enough time to manage OA in the consultation when it is the only problem being managed?					
1 not enough	0	0	0	1 (11.1)	0
2	2 (10.0)	1 (9.1)	1 (11.1)	0	1 (12.5)
3 just enough	9 (45.0)	3 (27.3)	6 (66.6)	3 (33.3)	1 (12.5)
4	7 (35.0)	5 (45.5)	2 (22.2)	3 (33.3)	3 (37.5)
5 plenty of time	2 (10.0)	2 (18.2)	0	2 (22.2)	3 (37.5)
Do you have enough time to manage OA in the consultation when there are other problems which also need to be managed?					
1 not enough	12 (60.0)	5 (45.5)	7 (77.7)	4 (44.4)	4 (50.0)
2	2 (10.0)	1 (9.1)	1 (11.1)	3 (33.3)	1 (12.5)
3 just enough	5 (25.0)	4 (36.4)	1 (11.1)	2 (22.2)	2 (25.0)
4	1 (5.0)	1 (9.1)	0	0	1 (12.5)
5 plenty of time	0	0	0	0	0
Do you feel confident about diagnosing OA clinically?					
1 not confident	1 (5.0)	1 (9.1)	1 (11.1)	0	0
2	0	0	0	0	0
3 somewhat	10 (50.0)	5 (45.5)	5 (55.5)	0	0
4	8 (40.0)	5 (45.5)	3 (33.3)	7 (77.8)	3 (37.5)
5 very confident	1 (5.0)	1 (9.1)	0	2 (22.2)	5 (62.5)



Table continued	Number (%) GPs with response				
	Baseline (n=20)	Baseline non- responders (n=11) <sup>1</sup>	Baseline responders (n=9) <sup>2</sup>	1 month (n=9)	5 months (n=8)
Do you feel confident about examining peripheral joints in older patients?					
1 not confident	0	0	0	0	0
2	1 (5.0)	0	1 (11.1)	0	0
3 somewhat	12 (60.0)	6 (54.5)	6 (66.6)	0	0
4	6 (30.0)	5 (45.5)	1 (11.1)	6 (66.7)	3 (37.5)
5 very confident	1 (5.0)	0	1 (11.1)	3 (33.3)	5 (62.5)
Do you feel confident in prescribing medication for OA?					
1 not confident	0	0	0	0	0
2	0	0	0	0	0
3 somewhat	3 (15.0)	2 (18.2)	1 (11.1)	0	0
4	12 (60.0)	5 (45.5)	7 (77.7)	4 (44.4)	2 (25.0)
5 very confident	5 (25.0)	4 (36.4)	1 (11.1)	5 (55.6)	6 (75.0)
Do you feel confident about supporting patients with OA to self-manage their condition?					
1 not confident	0	0	0	0	0
2	1 (5.0)	0	1 (11.1)	0	0
3 somewhat	10 (50.0)	4 (36.4)	6 (66.6)	1 (11.1)	1 (12.5)
4	6 (30.0)	4 (36.4)	2 (22.2)	3 (33.3)	2 (25.0)
5 very confident	3 (15.0)	3 (27.3)	0	5 (55.6)	5 (62.5)
How much do you think written information for patients with OA helps them to better manage their condition?					
1 not at all	0	0	0	0	0
2	1 (5.0)	0	1 (11.1)	0	0
3 somewhat	10 (50.0)	6 (54.5)	4 (44.4)	2 (22.2)	1 (12.5)
4	6 (30.0)	3 (27.3)	3 (33.3)	2 (22.2)	3 (37.5)
5 a lot	3 (15.0)	2 (18.2)	1 (11.1)	5 (55.6)	4 (50.0)
How much do you think exercise and increasing physical activity by people with OA will improve their pain? <sup>3</sup>					
	(n=19) <sup>3</sup>	(n=10) <sup>3</sup>			
1 not at all	0	0	0	0	0
2	0	0	0	0	0
3 somewhat	4 (21.1)	4 (40.0)	0	1 (11.1)	0
4	12 (63.2)	5 (50.0)	7 (77.7)	3 (33.3)	1 (12.5)
5 a lot	3 (15.8)	1 (10.0)	2 (22.2)	5 (55.6)	7 (87.5)

Table continued	Number (%) GPs with response				
	Baseline (n=20)	Baseline non- responders (n=11) <sup>1</sup>	Baseline responders (n=9) <sup>2</sup>	1 month (n=9)	5 months (n=8)
How much do you think losing weight by people with OA, if they are overweight or obese, will improve their pain? <sup>3</sup>	(n=19) <sup>3</sup>	(n=10) <sup>3</sup>			
1 not at all	0	0	0	0	0
2	0	0	0	0	0
3 somewhat	2 (10.5)	1 (10.0)	1 (11.1)	0	0
4	11 (57.9)	6 (60.0)	5 (55.5)	2 (22.2)	1 (12.5)
5 a lot	6 (31.6)	3 (30.0)	3 (33.3)	7 (77.8)	7 (87.5)
When wanting to refer a patient with osteoarthritis, do you have good access to physiotherapy services?					
1 very poor	1 (5.0)	0	1 (11.1)	0	0
2	2 (10.0)	1 (9.1)	1 (11.1)	0	0
3 reasonable	9 (45.0)	5 (45.5)	4 (44.4)	5 (55.6)	2 (25.0)
4	4 (20.0)	4 (46.4)	0	3 (33.3)	5 (62.5)
5 very good	4 (20.0)	1 (9.1)	3 (33.3)	1 (11.1)	1 (12.5)
When wanting to refer a patient with OA, do you have good access to occupational therapy services?					
1 very poor	3 (15.0)	0	3 (33.3)	0	1 (12.5)
2	5 (25.0)	3 (27.3)	2 (22.2)	3 (33.3)	3 (37.5)
3 reasonable	5 (25.0)	4 (36.4)	1 (11.1)	6 (66.7)	2 (25.0)
4	4 (20.0)	3 (27.3)	1 (11.1)	0	2 (25.0)
5 very good	3 (15.0)	1 (9.1)	2 (22.2)	1 (11.1)	0
When wanting to refer a patient with OA, do you have good access to rheumatology services?					
1 very poor	0	0	0	0	0
2	6 (30.0)	4 (36.4)	2 (22.2)	0	1 (12.5)
3 reasonable	9 (45.0)	5 (45.5)	4 (44.4)	5 (55.6)	3 (37.5)
4	4 (20.0)	2 (18.2)	2 (22.2)	4 (44.4)	2 (25.0)
5 very good	1 (5.0)	0	1 (11.1)	0	2 (25.0)
When wanting to refer a patient with OA, do you have good access to orthopaedic services?					
1 very poor	1 (5.0)	0	1 (11.1)	0	0
2	2 (10.0)	1 (9.1)	1 (11.1)	2 (22.2)	1 (12.5)
3 reasonable	8 (40.0)	4 (36.4)	4 (44.4)	5 (55.6)	3 (37.5)
4	7 (35.0)	5 (45.5)	2 (22.2)	2 (22.2)	4 (50.0)
5 very good	2 (10.0)	1 (9.1)	1 (11.1)	0	0

Table continued	Number (%) GPs with response				
	Baseline (n=20)	Baseline non- responders (n=11) <sup>1</sup>	Baseline responders (n=9) <sup>2</sup>	1 month (n=9)	5 months (n=8)
How much do you have a "heart-sink" reaction to patients with OA?					
1 not at all	4 (20.0)	3 (27.3)	1 (11.1)	2 (22.2)	3 (37.5)
2	11 (55.0)	6 (54.5)	5 (55.5)	3 (33.3)	2 (25.0)
3 somewhat	4 (20.0)	2 (18.2)	2 (22.2)	3 (33.3)	3 (37.5)
4	1 (5.0)	0	1 (11.1)	1 (11.1)	0
5 a lot	0	0	0	0	0

1 - non-responders at 1 month

2 - responders at 1 month

3 - n = 19 at baseline for questions: "How much do you think exercise and increasing physical activity by people with OA will improve their pain?" and "How much do you think losing weight by people with OA, if they are overweight or obese, will improve their pain?"

Supplementary table 8.16 GP beliefs and attitudes to OA and its management and access to services for OA, at baseline and one and five months after workshops

1. Explaining the mechanism of increased pain with increased flares
2. Simulated patient in group sessions to breakdown consultations and look at different styles
3. Explaining wear and tear, flare and repair model
4. Simulated patients in the training session
5. “Expressions” to describe OA to the patient
6. The consultations were useful and generated interesting discussion
7. I did find it frustrating doing part of the consultation, then stopping, as I feel different people consult differently, but understand why we stopped
8. Video consultations - doing two is good
9. Simulated patient work in groups
10. Watching consultations
11. Watching each other consult and work on technique
12. Discussion of patients’ understanding of phrases we use and their reactions to them was very enlightening
13. This will help me mould my explanations / consultation to the patient
14. Group discussion re using different phrases
15. Explaining diagnosis of OA / offering different options
16. Comparing the two video sessions along with forum to discuss options
17. Watching others in consultation
18. Simulated surgery was very useful
19. Simulated patient - although “artificial” allows GP to try out different approaches in order to fine tune the delivery of the OA based consultation
20. Practice consulting with patient and analysing the consultation as it went
21. Learnt from how other Dr’s consulted
22. Simulated patient

Supplementary box 8.1 Free text responses relating to skills training elements

1. Discussion with rheumatologist
2. Rheumatology Q and A session was excellent
3. Session with Consultant Rheumatologist
4. Secondary care colleague view
5. Meeting with rheumatologist and clarification about diagnosis
6. Mapping OA services
7. Discussing the OA among us
8. Brainstorming at session 2 - how the ideal consultation would look
9. Discussion of diagnosis criteria
10. In house sessions
11. Managing difficult patients scenario

Supplementary box 8.2 Free text responses relating to other specific workshop sessions

Aspects of the model OA consultation

1. Reinforcing pain management and exercises
2. Giving information for patients to reflect on will help even if they didn't believe, or even like, you
3. Positive approaches to self-management
4. All the different management options available
5. Confidence in diagnosing OA without x-rays
6. Excluding other pathology

Aspects of the trial intervention

1. Template
2. The template is excellent
3. Guidebook
4. The explanation of what OA is and the positive / proactive approach to "what can be done" in terms of the clinic
5. Positive about nurse clinic - something else to offer

Supplementary box 8.3 Free text responses relating to aspects of the model OA consultation and of trial intervention

1. Not having any unpacking of the videos felt odd and left dangling, would have been useful to have some individual feedback
2. Feedback on videos
3. Perhaps some scientific models of OA
4. No
5. Written published evidence is always interesting. Just the conclusions is enough
6. Maybe a summary of up to date evidence on surgery / consultations etc
7. Don't think so
8. Individual feedback on video sessions
9. No
10. No. comprehensive hand-outs have been very useful
11. Just right
12. A session on what the nurses will be offering in their clinics - an abbreviated video of the four sessions they will offer?
13. I know exactly what my nurse does/delivers in the asthma/diabetes/COPD clinic - don't know what she does in theses clinics
14. Don't think so
15. Psychological component
16. Treatment plan

Supplementary box 8.4 Free text responses relating to what else should have been included in workshops

Making it clear at the beginning that it is about managing the consultation as most on the OA

Thanks for the help!

Very good thank you

Fabulous trainers (organisers and making the process enjoyable and non-patronising)

Supplementary box 8.5 Free text responses relating to other comments about workshops

## Appendix 8.2 Development of categories for free-text responses in vignette

### *Categories for free-text responses to question 1*

The initial set of draft categories for the first question (What diagnosis would you give?) and the two independently developed sets are shown in table 1.

Initial set	Independent set 1	Independent set 2
<ol style="list-style-type: none"> <li>1. OA or osteoarthritis</li> <li>2. Arthritis</li> <li>3. Symptom based diagnosis (knee pain / arthralgia)</li> <li>4. Descriptive terms (early degenerative changes / meniscal damage, wear and tear).</li> </ol>	<ol style="list-style-type: none"> <li>1. Osteoarthritis</li> <li>2. Arthritis</li> <li>3. Wear and tear</li> <li>4. Degeneration</li> <li>5. Damage</li> <li>6. Pain/arthralgia</li> </ol> <p>With Modifying terms</p> <ul style="list-style-type: none"> <li>• Mild to moderate</li> <li>• Early</li> </ul>	<ol style="list-style-type: none"> <li>1. OA</li> <li>2. Unspecified arthritis or arthralgia</li> <li>3. Wear and Tear</li> <li>4. Biomedical description</li> <li>5. Inflammatory Arthritis</li> <li>6. Symptoms only e.g. pain</li> </ol>

Table 1 Initial and two independently developed sets of draft categories for question 1 responses

Both independent sets were very similar to the initial set and it was agreed that the initial set should be adopted as the typology for question one, with one small revision: category “2” was renamed “Arthritis (unspecified or other than OA)” to clarify that it could be used to classify responses referring in general to “arthritis” and those referring to more specific forms of arthritis other than OA (table 8.5 in the thesis). It was agreed that the modifying terms in “independent set 1” would not be included in the typology, as inclusion would have resulted in too many categories, against the original plan for the typology for a “limited number of categories”).

### *Categories for free-text response to question 2*

The initial set of draft categories for the second question (How would you describe the diagnosis to the patient?) and the two independently developed sets are shown in table 2.

Initial set	Independent set 1	Independent set 2
1. Wear and tear or degeneration used in description 2. “repair” or “improve” or “mend” or “respond” used in the description on own or to accompany or modify “1”	1. Osteoarthritis 2. Arthritis 3. Wear and tear 4. Strain 5. Wear (or flare) and repair 6. Degeneration 7. Age-related 8. Chronic pain 9. Inflammation  With Modifying terms <ul style="list-style-type: none"> <li>• Early (mild/not severe /common/can improve etc)</li> <li>• Xray/investigation needed to sort</li> <li>• Relapsing/remitting course</li> <li>• Causes or treatments</li> </ul>	1. Wear and Tear 2. Wear and repair, use of joint and mending 3. Degeneration 4. Age, years, natural 5. Chronicity and progression 6. Biomedical description cartilage Joint structure 7. Signs imaging xray etc 8. Limiting ADL 9. Symptoms e.g. pain, inflammation 10. Limiting movement 11. Comorbidities e.g. weight 12. Not limiting, not severe 13. Joint 14. Rx will improve 15. Fluctuating, flare 16. Gradual process 17. Not worrying

Table 2 Initial and two independently developed sets of draft categories for question 2 responses

The initial set proposed classifying responses into one of two categories: those which described the diagnosis in generally negative terms (category “1”) and those which gave a more positive description (category “2”). The independent sets contained categories which matched these two concepts but which were more dispersed, and also created many categories which addressed other concepts. It was agreed that the free-text responses should



be re-read to determine if there were individual responses which could not be classified as a “negative” or “positive” description using the initial set draft categories, and if so that categories should be chosen from the independent sets to enable classification of these responses.

On re-reading the responses, five (out of a total of 36) responses presented a description of the diagnosis which did not correspond to a “positive” or “negative” description. Three categories included in one or both of the independent sets were proposed to allow full classification of these five responses: i) a description focussing on symptoms and signs of the diagnosis (which can include mention of inflammation), ii) a description focussing on x-ray findings, and iii) a description focussing on relationship of diagnosis to increasing age and ubiquity of diagnosis in older people. In addition, three of the 36 responses included “positive” statements which were not included in the initial set definition of category “2” and the definition was refined to include mention of controlling the problem or the need to treat the problem.

The proposals for additional categories and the refined category “2” were agreed and the phrasing of all the categories was revised to provide consistency of phrasing across all the categories for the typology for question 2 (table 8.5 on the thesis).

### *Categories for free-text responses to question 3*

The development of the initial set of draft categories for the third question (What the future is likely to hold”) focused on two aspects of the responses: statements about prognosis and statements about treatment. Prognosis statements were made as to whether prognosis was: i)

good, that symptoms and function would improve, ii) poor, that they would worsen or iii) uncertain or variable, that it was difficult to tell or that symptoms could come and go. Treatment statements were made as to whether prognosis was contingent on the condition being treated, for example by exercising, physiotherapy, losing weight or taking painkillers. Some responses included statements about both topics, for example “with appropriate treatment, should be able to relieve symptoms” and some only included statements about prognosis, for example “reasonably good prognosis”. On this basis six categories were developed for the initial set of draft categories for the third question. This initial set and the two independently developed sets are shown in table 3.

Initial set	Independent set 1	Independent set 2
1. Good prognosis 2. Good prognosis contingent on treatment 3. Neutral / uncertain prognosis 4. Neutral / uncertain prognosis mitigated by treatment 5. Poor prognosis 6. Poor prognosis mitigate by treatment	1. General prognosis a. Good b. Bad c. Uncertain 2. Actions to be taken Lifestyle a. Analgesia b. Self-management 3. Expectations of action a. Positive prognosis if done b. Not stated	1. Good prognosis 2. Will deteriorate/ need surgery if don't use combined core pharma and non pharma Rx 3. Will improve with Rx/measures 4. Remain in work 5. Flare ups 6. Regular ongoing Rx 7. Unpredictable 8. Worsen over time, chronic 9. Fluctuating 10. Self management

Table 3 Initial and two independently developed sets of draft categories for question 3 responses

It was agreed that the major concepts concerning prognosis covered by the draft categories in the independent sets were covered by the initial set categories and these categories were agreed for use in the typology for question 3 (table 8.5 in the thesis).

## **Appendix 9.1 Slide set for workshop 1 for south Shropshire practices**

primary care centre

Keele University

## Enhancing Primary Care Management of Osteoarthritis in South Shropshire

Practice workshop 1



Keele University

## Catching up

- The recent launch event
  - Which practice members attended?
  - Brief recap and questions
- How will the practice implement these ideas?
- Has anyone done the ARUK eLearning unit yet?

Keele University

## What we aim to achieve

- Implement NICE Guideline for OA
- Involve practice nurses more in OA care
- Help patients understand their OA better
- Support patients' self-management
- Without adding significantly to GP workload

Keele University

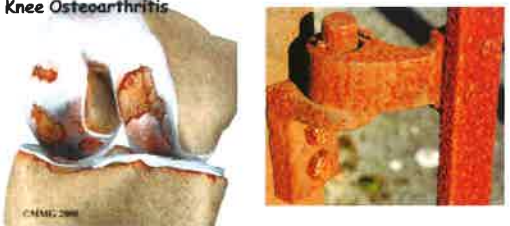
## The burden of OA

- Commonest painful condition
- Affects 8 million in UK (ARUK figures)
- Common condition in GP consultations
- Often ignored?

Keele University

## The underlying problem


Knee Osteoarthritis



© NICE, 2008

Keele University

## The underlying problem – complex



© Floris Lafeber



## The underlying problem – modifiable



Remove / reduce stressors

Joint capable of repair



## Natural history of OA

- Knee and hand OA not always progressive
- Characterised by “flares” with more symptoms then improvement
- Patients consult during flares, so can be mistaken for disease progression
- Hip OA has greater tendency to progress
- Well judged joint replacement is effective



## The patient's perspective

- Self management happens outside of primary care consultations
- Own experiences and lay networks are equally valid
- Knowledge embedded in the clinical experience



## For some, it's not so positive

- Distress, discomfort
- Reduced mobility, reduced confidence
- Inability to maintain social contact, interests
- Reduced capability for independence
- Possible impact on family eg as a carer
- Adverse effect on co-existing conditions, through lack of exercise, weight gain etc
- Downwards spiral



## Key tasks for OA consultations

1. Make diagnosis clinically
2. Give the diagnosis clearly
3. Explain the diagnosis
4. Provide written information
5. Provide analgesia advice / prescription
6. Promote and support self-management



## Task 1: Make diagnosis clinically

- Next workshop to look in more detail at this
- It is mostly in the history
- OA is not an X-ray diagnosis



## Task 2: Give diagnosis clearly



## What's in a name?

- "Wear and tear" or "Wear and tear arthritis" probably most commonly used by GPs
- What terminology do you use?
- How positive a message does it convey?



## "Wear and tear"

- How do you and your patients interpret this?



## "Wear and tear" – what patients think we mean

- It's nothing to worry about, it's a natural process
- You are getting old and have worn your bones out
- It's an irreversible process that will only get worse
- I don't know how to treat you
- I'm not bothered and neither should you be
- There's nothing we can do.

Drew Moore personal communication



## More helpful terms

- Wear and repair – a bit cumbersome but more accurate
- Osteoarthritis – it matches the guideline and patient information leaflets



## Task 3: Explain the diagnosis

- Plain English and simple concepts
- What does the patient already know?
- Use your knowledge of the natural history
- May need to correct unhelpful beliefs
- Many patients still expect X-rays

**Task 4: Provide written info.**



Arthritis Care helpline 0808 800 4050

Someone to talk to

Arthritis Care Helpline is open from 10am - 4pm weekdays. Ring freephone 0808 800 4050 for a chat or email [Helpline@arthritiscare.org.uk](mailto:Helpline@arthritiscare.org.uk)

**Task 5: Analgesia**

- To be covered in Workshop 2 and nurse training

**Task 6: Promote & support self-management**

- GPs:
  - Clear diagnosis and explanation
  - Positive messages
  - Suggest how nurse might help
- Practice nurses:

**Practice nurse role**

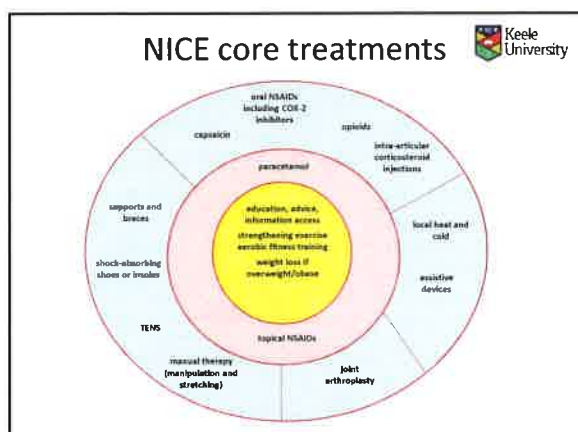
- Listen to patient's story and assess:
  - Impact of joint symptoms
  - Ideas/health beliefs, concerns, expectations
- Further explain diagnosis of OA
- Correct unhelpful beliefs
- Support self-management:
  - Activity and exercise – set realistic goals
  - Weight management
  - Signpost external resources

**Practice nurse training**

- eLearning resource from ARUK
- Workshop 1
  - Background information
  - How to help a patient with OA
- Workshop 2
  - Advising on activity and exercises
  - Consulting with patients – practical exercises

**Summary of NICE OA guidelines**

- Clinical diagnosis: >45, symptoms, no red flags
- Information: verbal and written
- Support for self-management:
  - Activity and exercise
  - Weight loss if appropriate
- Analgesic management
- Consider annual review
- Appropriate and timely surgical referral



### Next workshop at the practice

- The GP consultation:
  - Clinical basis for diagnosis
  - Explaining OA to patients
- The consultation template

### Continuing support

- Named Clinical Champions – GP and nurse
  - Support in using templates if needed
  - Problem solving
  - Support for nurses in delivering enhanced care
- CCG
  - Quality indicators
  - Audit and feedback
  - Evaluation of project

### Key points

- Diagnose OA clinically, not on X-ray
- Give diagnosis and explanation clearly
- Avoid negative messages
- Identify and correct misinformation
- Self management is a powerful tool
- Practice nurses are well-placed to support self management

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MOSAICS, MOSAIC and OA template including training materials. ©Keele University, 2014

Arthritis Research UK

PCRN






## **Appendix 9.2 Slide set for workshop 2 for south Shropshire practices**

primary care centre

Keele University

## Enhancing Primary Care Management of Osteoarthritis in South Shropshire

Practice workshop 2 - GPs



Keele University

## Catching up

- Any questions from Workshop 1 or eLearning?
- Has OA template been installed?
  - Tried using it?
  - Questions or comments so far?
  - Few slides on template to follow

Keele University

## NICE Guideline summary


- Clinical diagnosis: >45, symptoms, no red flags
- Information: verbal and written
- Support for self-management:
  - Activity and exercise
  - Weight loss if appropriate
- Analgesic management
- Consider annual review
- Appropriate and timely surgical referral

Keele University

## The MOSAICS OA Template

- Pops up in response to pre-determined codes
- So important to enter a problem title during the consultation

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data.csv

weight	height	sex	age
John Doe	100	M	11.1
Marlene Doo	100	F	11.1
WY Wilson	100	M	11.1
Tom Woot	100	M	11.1
Industrious Inc	100	M	11.1
Joe Smith	100	M	11.1
Adrian	100	M	11.1
Glorious Admin	100	M	11.1
Glorious Admin	100	M	11.1

[illegible][illegible][illegible][illegible]



## Key tasks for OA consultations

1. Make diagnosis clinically
2. Give the diagnosis clearly
3. Explain the diagnosis
4. Provide written information
5. Provide analgesia advice / prescription
6. Promote and support self-management

## Task 1: Make diagnosis clinically

- Next workshop to look in more detail at this
- It is mostly in the history
- OA is not an X-ray diagnosis

## Making the diagnosis - NICE

A working diagnosis of OA:

- Persistent joint pain with use (knee, hip, hand)
- Age 45 years and over
- Morning stiffness less than ½ hour
- An alternative diagnosis is unlikely



## Rule outs

- |   |   |
|---|---|
| <p><b>Hip and knee</b></p> <ul style="list-style-type: none"> <li>• <b>Red flags:</b> fracture, sepsis, cancer</li> <li>• <b>Referred pain</b> <ul style="list-style-type: none"> <li>– At the hip from the back</li> <li>– At the knee from the hip</li> </ul> </li> <li>• <b>Bursitis</b></li> <li>• <b>Fibromyalgia</b></li> </ul> | <p><b>Knee only</b></p> <ul style="list-style-type: none"> <li>• <b>Inflammatory arthritis</b></li> <li>• <b>(Pseudo) gout</b></li> <li>• <b>Meniscal disease</b></li> </ul> <p><b>Hip only</b></p> <ul style="list-style-type: none"> <li>• <b>Polymyalgia rheumatica</b></li> <li>• <b>Avascular necrosis femoral head</b></li> <li>• <b>Meralgia paraesthetica</b> (entrapment lateral cutaneous nerve thigh)</li> </ul> |
|---|---|



### Joint examination is useful

- Patients expect it
- May help to rule out alternatives
- Can help detect referred problems



### Is it OA or RA? – a quick quiz

- Affects large joints
- Affects small joints
- Often one joint affected
- Multiple joints affected symmetrically
- Prolonged morning stiffness
- Painful if joint squeezed
- Worse on activity
- Better on resting
- Possible crepitus
- Nodes seen on hands and fingers
- Symptoms seen elsewhere – not just in the joints



### Imaging



#### X-rays useful in:

- Other pathology
  - Fracture
  - Avascular necrosis / Perthes
- Hip and back pain
- Pre-referral for arthroplasty

#### MRI

- Research tool only



### Task 2: Give the diagnosis

- Ask the patient what she/he thinks is going on
- Tailored to patient's ideas and concerns
- What to call it? – remember last workshop?



### Task 3: Explain the diagnosis

- The whole joint
  - bone / cartilage / synovium / muscle / ligaments
- Damage from stresses
  - injury / sport / work / weight / malalignment
- Capable of repair
- Not inevitably worse
- Something we can do
  - strengthen muscles / lose weight / help pain



### Practical session

- In pairs or trios:
  - Try using “osteoarthritis” as a diagnosis you would give if you don't usually do so
  - Try “wear and repair” and any variants you prefer
  - Give a succinct and positive explanation of OA and its natural history
  - Explain the limited place of imaging in OA
  - Explain timing, benefits and risks of arthroplasty

## Task 4: Provide written information

### Aide memoire

#### THE CONSULTATION

1. Make, give and explain the diagnosis	Ask about Ideas
2. Address expectations	Concerns
3. Offer the OA Guidebook and clinic	Expectations

#### THE DIFFERENTIAL DIAGNOSIS

Alternative diagnoses to be excluded at hip and knee (from OA Hands On 2011)

<b>Both hip and knee</b> <ul style="list-style-type: none"> <li>• Bad fall</li> <li>• Fracture</li> <li>• Septic</li> <li>• Cancer</li> <li>• Referred pain               <ul style="list-style-type: none"> <li>• To the hip from the back</li> <li>• To the knee from the hip</li> </ul> </li> <li>• Bursitis</li> <li>• Fibromyalgia</li> </ul>	<b>Knee only</b> <ul style="list-style-type: none"> <li>• Inflammatory arthritis</li> <li>• (Pseudo) gout</li> <li>• Meniscal disease</li> </ul>
	<b>Hip only</b> <ul style="list-style-type: none"> <li>• Polyarthritis (rheumatoid)</li> <li>• Avascular necrosis of the femoral head</li> <li>• Metastatic neuroblastoma (extracranial lateral extension over thigh)</li> </ul>

## What can we do?

1. Maximise repair process in the joint
  - Reduce load / strengthen tissues
2. Timely referral for joint replacement
  - Don't use assessment tools (NICE 2014)
  - Refer before muscle wasting or deformity
  - Maximise movement/strengthening
3. Give patients strategies for
  - Minimising the impact of pain
  - Improving function / quality of life
4. Provide support for self-management

## Task 5: Advise/prescribe analgesia

### 1. NICE recommendations

- Heat and cold applications
- Paracetamol and /or topical NSAIDs
- Adjunct treatments
  - Capsaicin
  - Oral NSAIDs / opioids
  - IA steroids
  - TENS

### 2. Negotiate a plan (menu of options)

## Task 6: Supported self-care

### Practice nurse can provide NICE core OA treatments

1. Increase physical activity
2. Exercises for mobility and strengthening
3. Weight loss, if relevant
4. Appropriate analgesia

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MOSAICS, MOAC and OA template including training materials. © Keele University, 2014





## **Appendix 10 Publications arising from the thesis**

**Porcheret M, Grime J, Main C and Dziedzic K. Developing a model osteoarthritis consultation: a Delphi consensus exercise. *BMC Musculoskeletal Disorders* 2013;14:25**

**Porcheret M, Main C, Croft P, McKinley R, Hassell A, and Dziedzic K. Development of a behaviour change intervention: a case study on the practical application of theory. *Implementation Science* 2014;9:42**

RESEARCH ARTICLE

Open Access

# Developing a model osteoarthritis consultation: a Delphi consensus exercise

Mark Porcheret\*, Janet Grime, Chris Main and Krysia Dziedzic

## Abstract

**Background:** Osteoarthritis (OA) is a common condition managed in general practice, but often not in line with published guidance. The ideal consultation for a patient presenting with possible OA is not known. The aim of the study was to develop the content of a model OA consultation for the assessment and treatment of older adults presenting in general practice with peripheral joint problems.

**Methods:** A postal Delphi consensus exercise was undertaken with two expert groups: i) general practitioners (GPs) with expertise in OA management and ii) patients with experience of living with OA. An advisory group generated 61 possible consultation tasks for consideration in the consensus exercise. Expert groups were asked to consider which tasks should be included in the model OA consultation. The exercise was completed by 15 GPs and 14 patients. The level of agreement for inclusion in the model was set at 90%.

**Results:** The model OA consultation included 25 tasks to be undertaken during the initial consultation between a GP and a patient presenting with peripheral joint pain. The 25 tasks provide detailed advice on how the following elements of the consultation should be addressed: i) assessment of chronic joint pain, ii) patient's ideas and concerns, iii) exclusion of red flags, iv) examination, v) provision of the diagnosis and written information, vi) promotion of exercise and weight loss, vii) initial pain management and viii) arranging a follow-up appointment. Both groups prioritised a bio-medical approach to the consultation, rather than a bio-psycho-social one, suggesting a discordance between current thinking and research evidence.

**Conclusions:** This study has enabled the priorities of GPs and patients to be identified for a model OA consultation. The results of this consensus study will inform the development of best practice for the management of OA in primary care and the implementation of evidence-based guidelines for OA in primary care.

**Keywords:** Primary care, General practice, Osteoarthritis, Patient-centred care, Physician-patient relationship, Health services research

## Background

Osteoarthritis (OA) is a highly prevalent condition which presents and is managed in primary care [1]. Evidence-based guidelines on its management have been published by professional bodies and the UK National Institute for Health and Clinical Excellence (NICE) [2-7]. The NICE OA Guideline recommends: i) a holistic approach to the management of OA ii) three core treatments (access to information, exercise and physical activity and interventions to achieve weight loss) be offered to all people with OA and iii) a range of other evidence-based interventions for

those with persisting pain and/or disability [6]. Evidence suggests that management of patients presenting with OA in the UK is not in line with published guidance: older patients consulting with peripheral joint pain report that the problem may be dismissed [8,9] and NICE core treatments are not routinely offered early on in the course of the condition [10-12]. This paper forms part of a wider study investigating how to improve implementation of NICE OA guidance in UK primary care.

What then are the potential components of an ideal consultation for OA? To investigate this we have undertaken a consensus exercise to determine the views of patients and clinicians about the possible content of an "ideal" consultation between a GP and a patient presenting with joint

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pain. Although there are evidence-based frameworks for medical consultations, notably the Calgary-Cambridge Framework [13], and there is the background science about primary care OA management summarised in the NICE guidelines, there is no empirical evidence to guide the identification of the specific content of a model OA consultation. In such circumstances, consensus studies with experts have been advocated as the “next best” option [14,15]. The relevant “experts” are the two participants in the consultation, namely, in the UK, the general practitioner (GP) and the patient presenting with OA [16].

The aim of the consensus exercise was to elicit the views of a GP group and a patient group (patients who have OA) on the content of a model OA consultation and determine consensus about which specific tasks might be included in such a consultation.

## Methods

A Delphi consensus exercise [17] was undertaken in four stages: i) an ideas generation round, ii) development of a common consensus questionnaire for GP and patient groups, iii) consensus rounds undertaken separately by the groups and iv) establishing the criterion for consensus in terms of the level of agreement needed for a statement to be included in the model OA consultation. Ethical permission for the study was given by South Manchester Research Ethics Committee (reference number: 09/H1003/2).

### Stage 1 - ideas generation round

#### Initial development

The NICE Guideline for the management of OA, was used as the basis for a set of principles which were specified in advance of the consensus exercise: i) a primary care OA consultation needed to cover the focused assessment of an older adult presenting with a peripheral joint problem and the consequent treatment of those considered to have OA. ii) the consultation would be patient-centred and support self-management, iii) the diagnosis of OA would be made clinically, iv) if a diagnosis of OA was made the GP would offer the patient written information about OA (an OA Guidebook which had been developed for the study investigating the implementation of the NICE OA Guideline referred to above), and v) the treatment algorithm advocated in the NICE OA guideline would be followed. Further, vi) follow-up appointments with a specially trained health-care professional would be routinely available to further support self-management of osteoarthritis, and would be offered during the consultation (a service being provided in the implementation study) and vii) the Calgary-Cambridge model was chosen as the framework for the consultation. The Calgary-Cambridge model consists of 71 consultation skills which clinicians should be able to

utilise when communicating with patients, which are organised in a framework describing the flow of a typical consultation: initiating the session, gathering information, physical examination, explanation and planning, and closing the consultation. It is very widely used in Medical School communication skills teaching and underpins the UK's Royal College of General Practitioners curriculum for the consultation [18].

Prior to the consensus exercise the research team drew up an initial list of 34 statements about a model OA consultation based on the processes listed in the Calgary-Cambridge framework.

#### The advisory group

Inclusion criteria for the advisory group were: i) professionals who were expert in the management of OA or ii) lay people who were “expert” in what it is like to have the condition. Membership was invited from: i) former members of the NICE OA Guideline Development Group, ii) members of the Arthritis Research UK Primary Care Centre and iii) members of the Arthritis Care Helpline team. A group of 27 professionals (ten GPs, five physiotherapists, four rheumatologists, three nurses, three occupational therapists and two social scientists) and seven lay people was identified.

The initial list of 34 statements developed by the research team was sent to members of the advisory group, who were asked to comment on each statement and to suggest additional statements. The comments and suggested additions were collated, and reviewed for consistency and overlap, and a final list of 61 statements was developed for consideration in the consensus rounds.

### Stage 2 - consensus questionnaire

The questionnaire consisted of a case scenario, task instructions, the final list of statements and a consent form. The patient presented in the scenario had a problem with their knee:

- A 57 year old attends the GP for the first time with a knee problem. The problem has worsened over the past few months and the patient has come to ask for help coping with it.

The GPs and patients undertaking the consensus exercise were given a framework for the consultation which was based on the set of principles listed in stage 1. The instructions stated that: i) the treatment algorithm in the 2008 NICE OA Guideline should be followed, and a figure of the NICE target algorithm was included; ii) the consultation was to support the patient's self-management of OA; iii) the diagnosis would be made clinically; iv) if a diagnosis of OA was made the GP should offer the OA Guidebook and a follow-up appointment with the specially

trained healthcare professional. To simplify the consensus task, the scenario focused on one joint, the knee, and the tasks to be considered were those for the assessment and treatment of a problem in the knee rather than any peripheral joint. Participants were asked to consider the statements regarding explanation and planning on the basis that a diagnosis of OA had been made and that the OA Guidebook would be given to the patient.

### Stage 3 - consensus rounds

#### *Sample size calculation and recruitment of expert groups*

A consensus methods review [14] suggested that consensus groups should have between 6 and 12 members. If fewer than this, reliability declines, whereas little further is gained by having more than 12 contribute to the final consensus round. Assuming a 70% response to each round (60% for GPs), and two consensus rounds, sample sizes needed for the two consensus groups were calculated as: patient group (n = 25), GP group (n = 35).

The inclusion criteria were: for the GP group, expertise in managing OA; for the lay group, having, or caring for someone with, OA. Potential members of the GP group were recruited at the 2008 Primary Care Rheumatology Society Annual Conference. Recruitment of the patient group was undertaken by inviting members of the Research User Group at the Arthritis Research UK Primary Care Centre and previous participants in a Centre study, to join the group. All persons indicating a willingness to participate in the study were sent the first and second consensus questionnaires by post, and non-responders to either round were sent a reminder at two weeks. No payments were made for participation in the study.

#### *Composition and characteristics of expert groups*

32 GPs and 23 patients expressed an interest in participating in the study and were mailed the round 1 questionnaire. 16 GPs and 14 patients returned a round 1 questionnaire and of these all bar one GP completed and returned a round 2 questionnaire, a round 2 response of 47% and 61% respectively.

The GPs all declared a special interest in musculoskeletal disorders and were predominantly established GPs. The members of the patient group had a mean age of 72 years (interquartile range 67–76 years) and all had, or were caring for a person with, OA. Group characteristics are shown in Table 1.

#### *Undertaking consensus rounds*

In the first consensus round participants were asked to decide which statements should be included if “time was no object” (for example, if there was an extended period of time for the consultation or if it could be conducted over several appointments). Participants were asked to

**Table 1 Characteristics of GP and patient groups**

Characteristic	Number (%) group members
<b>GP Group (n = 15)</b>	
Female	6 (40)
Qualified as a GP for 5 yrs or longer	12 (80)
Undertakes dedicated musculoskeletal sessions	11 (73)
Practice type – urban/rural/mixed	10 (67)/1 (7)/4 (26)
Practice list size greater than 7 000	10 (67)
Undergraduate or postgraduate training practice	14 (93)
<b>Patient Group (n = 14)</b>	
Female	6 (43)
Reported “having osteoarthritis”	13 (93)
Reported ever consulting for osteoarthritis	11 (79)
Reported caring for someone with osteoarthritis	3 (21)

rate each statement using a five-point Likert scale (definitely include/probably include/undecided/probably not include/definitely not include) as anchors and a “don’t know” option.

In the second round participants were asked to consider which statements should be included if the consultation was only 10 minutes long (the normal maximum for GP consultations in the UK). For each statement participants were fed back their individual response from the first round and the total number of responses by their group for each item, and were asked to re-rate the statements.

The decision to define the length of the consultation differently in rounds 1 and 2 was made for pragmatic reasons: it was felt too onerous for participants in round 1 to decide which statements, from an extensive list, they would include in a time-limited consultation, and so a two-stage approach was adopted.

#### *Analysis of round 2 responses*

The responses from the patient and GP groups in the second consensus round were analysed separately, but using the same methodology. The proportion of participants who responded to each Likert item was calculated for each statement. Participants who had responded “don’t know”, or for whom there was missing data, were excluded from the denominator for the relevant statement. A response of either “definitely include” or “probably include” was defined as a response to include the statement in the model OA consultation.

#### **Stage 4 - defining consensus**

The level of agreement used to define consensus is often arbitrary [14]. Some studies have “set the bar” for agreement at the level of a simple majority, while others have set the bar higher [14]. We wanted to identify a set

number of consultation tasks which could realistically be undertaken in a 10-minute consultation, and not to pre-define an arbitrary level of agreement for a task to be included in the model OA consultation. For this reason an analysis of the number of statements at different levels of agreement for inclusion was undertaken to consider where to “set the bar”.

### Number of statements by level of agreement

The GP group demonstrated a high level of agreement for inclusion for many of the statements (Table 2). The patient group had a high level of agreement for fewer statements (Table 2). The cumulative number of statements which would be included at differing levels of agreement was determined for both groups (Table 2).

### “Setting the bar”

The bar was set at the same level for both groups and a statement was included if either (or both) group included it at or above the level of the bar. If the bar was set at 100% then 11 statements would be included. If the bar was lowered to 90% then a further 14 statements would be included in the model OA consultation resulting in 25 tasks in total. Lowering the bar to 80% would add an additional five statements resulting in 30 tasks being included in the model OA consultation.

From this analysis, it was felt that if the bar was set at 100% fewer tasks (11 tasks) than could be comfortably undertaken in a 10-minute consultation would be included, but setting it at 90% a realistically do-able number of tasks (25 tasks) would be included. Lowering the bar further would increase the number of tasks to be included and would result in more tasks being included than could realistically be undertaken in 10 minutes. For this reason it was decided to set the bar at 90% - a high level of agreement at which the number of tasks included could be realistically undertaken in a 10-minute consultation.

## Results

The 25 tasks with a level of agreement of 90% or more in either or both groups included in the model OA consultation are shown in Table 3. The tasks are those which were prioritised for inclusion in a 10-minute consultation between a GP and a patient presenting with chronic joint pain and enable detailed advice to be given as to how GPs could approach such a consultation. The first 12 tasks in the model detail the preferred approach by the groups to taking the history and examining the patient. The rest of the tasks give advice on the approach to giving and explaining the diagnosis, providing support for self-management and addressing the patient's need for analgesia. The two tasks given the highest priority were: i) enquiry about the need patient's need for painkillers and ii) recommending paracetamol and/or topical NSAIDs to address this need. There was 100% agreement for inclusion of these two tasks by both groups.

With a level of agreement for inclusion set at 90% or more, 36 statements were excluded from the model OA consultation (Table 4).

## Discussion

### Summary of main findings

Setting the bar for consensus at 90% resulted in the identification of 25 consultation tasks to be undertaken during the initial consultation between a GP and a patient presenting with peripheral joint pain. The 25 tasks provide detailed advice on how the following elements of the consultation should be addressed: assessment of chronic joint pain, patient's ideas and concerns, exclusion of red flags, examination, provision of the diagnosis and written information, promotion of exercise and weight loss, initial pain management, and arranging a follow-up appointment. There was high level of agreement in the GP group to include many of the tasks proposed for the model consultation; the patient group had high levels of agreement for fewer tasks.

**Table 2 Number of statements by level of agreement and cumulatively included for consensus groups**

Level of agreement for inclusion (%)	GP Group			Patient Group		
	No. of statements	Cumulative level of agreement (%)	No. of statements cumulatively included	No. of statements	Cumulative level of agreement (%)	No. of statements cumulatively included
100	11	100	11	2	100	2
90 – 99	14	> = 90	25	4	> = 90	6
80 – 89	4	> = 80	29	5	> = 80	11
70 – 79	5	> = 70	34	10	> = 70	21
60 – 69	8	> = 60	42	16	> = 60	37
50 – 59	3	> = 50	45	9	> = 50	46
<50	16			15		

**Table 3 Statements for inclusion in the model OA consultation**

Statement <sup>1</sup>	No. (%) GP Group would include (n = 15)	No. (%) Patient Group would include (n = 14)
<b>The GP: <sup>2</sup></b>		
Encourages the patient to give a full account of the problem(s), including the reason for coming today	15 (100)	11 (79)
Finds out how long the patient has had the knee problem for and whether the problem comes and goes	14 (93)	12 (86)
Asks specific questions about the amount and type of any pain	14 (100)	11 (79)
Asks about other knee symptoms such as stiffness, locking and giving way	13 (93)	12 (86)
Asks about problems with mobility, such as walking, going up and down stairs, and getting in and out of a chair	13 (93)	9 (64)
Asks if, and how, the knee problem affects activities such as work, hobbies, sports and general leisure activities	14 (100)	7 (50)
Asks about previous problems with the knee, knee operations, knee injections	13 (93)	11 (79)
Asks about problems with other joints, especially the other knee and the hips	14 (93)	8 (62)
Asks about the patient's ideas, concerns, fears and feelings about the problem	14 (93)	7 (54)
<b>Asks if the patient has tried anything to help the problem, and if yes, what/how used/how effective</b>	<b>15 (100)</b>	<b>12 (92)</b>
Checks if there is anything in the patient's story to suggest a fracture, cancer, inflammatory or septic arthritis	14 (93)	7 (54)
Examines the knee joint and surrounding tissues	15 (100)	11 (85)
<b>Informs the patient that the most likely reason for the problem is osteoarthritis and explains the reason(s) for coming to this diagnosis</b>	<b>15 (100)</b>	<b>12 (92)</b>
<b>Gives a brief explanation of osteoarthritis</b>	<b>14 (93)</b>	<b>12 (92)</b>
Asks if the patient has any unanswered questions	15 (100)	8 (57)
Hands the guidebook to the patient with the advice to read it	14 (93)	8 (62)
Encourages the patient to consider the use of "NICE core treatments", increased physical activity/muscle strengthening exercises/dietary changes to lose weight, if needed	14 (93)	10 (77)
Emphasises, when relevant, the benefit of losing weight: that if weight is lost then the pain reduces	14 (93)	10 (77)
Emphasises, when relevant, the benefit of exercise in helping to lose weight in addition to the benefits for osteoarthritis	14 (93)	8 (62)
<b>Enquires about the patient's need for painkillers</b>	<b>15 (100)</b>	<b>13 (100)</b>
<b>Recommends the use of paracetamol and/or topical NSAIDs (creams or ointments) before the use of other painkillers</b>	<b>15 (100)</b>	<b>13 (100)</b>
Summarises the management plan and re-checks that it is acceptable to the patient	14 (93)	9 (64)
<b>Advises the patient to make a follow up appointment with the specially trained healthcare professional</b>	<b>15 (100)</b>	<b>13 (93)</b>
Uses free-text to record the consultation in the paper/electronic records	14 (93)	8 (67)
In addition to statement above records coded data on the; i) diagnosis and ii) main elements of the consultation, such as the level of pain, the BMI and advice to exercise	15 (100)	10 (77)

**1 Statement in bold if 90% or more agreement in BOTH groups.**

**2 "The GP" is the stem for all the statements.**

### Comparison with existing literature

The items included in the consensus study for the model OA consultation cover both the assessment of the problem and its treatment if a diagnosis of OA has been made and is to the authors' knowledge the first study using consensus methodology to characterise such a consultation.

Two trials [19,20] have previously evaluated the effect of a standardised approach to consulting for OA. One of these [19] included both assessment and treatment, but in both studies the content of the consultation was developed by a group of experts through discussion and reference to published guidelines, and the methodologies for these have



**Table 4 Statements excluded from the model OA consultation**

<b>Statement The GP:*</b>	<b>No. (%) GP group would include (n = 15)</b>	<b>No. (%) Patient group would include (n = 14)</b>
Assesses the degree of pain using a formal measure, such as rating the pain on a scale from 0 to 10	1 (7)	8 (57)
Assesses the extent of mobility problems using a formal measure, such as a rating scale from 0 to 10.	1 (7)	7 (50)
Asks about a family history of joint problems	6 (43)	4 (29)
Asks about jobs which may have affected/caused the knee problem, such as those involving a lot of kneeling (for example, carpet fitter, cleaner, joiner, electrician)	9 (64)	5 (36)
Asks about the patient's expectations of the consultation	10 (67)	4 (31)
Asks which problem, concerning the knee, the patient wants help with most, for example pain, stiffness or climbing the stairs	9 (60)	5 (38)
Asks about who the patient has seen, or asked for help from, about the problem	10 (71)	6 (46)
Assesses the patient's mood for symptoms of anxiety and depression	8 (53)	1 (8)
Screens the patient for depression using a formal depression screening tool	0 (0)	0 (0)
Asks about other conditions, such as diabetes, heart or kidney disease, which might affect the management of the knee problem	10 (67)	9 (64)
Asks about circumstances, such as unemployment and financial hardship, which might affect the management of the knee problem	5 (33)	0 (0)
Assesses the knee joint by general observation of the patient's walking pattern, mobility and footwear	13 (87)	9 (69)
Performs a specific test, such as a timed walk test, to assess function	0 (0)	3 (21)
Examines the other knee, hips and hands for signs of osteoarthritis	11 (73)	10 (71)
If not recently done, measures weight and height to calculate the body mass index	6 (40)	6 (46)
Undertakes a full examination of the locomotor system (of the joints and muscles)	0 (0)	4 (33)
Enquires about the patient's views and understanding of osteoarthritis	13 (87)	9 (75)
In addition to giving a brief explanation explains the likely cause of osteoarthritis	4 (27)	9 (69)
In addition to giving a brief explanation explains the likely outcome for people with osteoarthritis	9 (60)	8 (62)
Explores the patient's understanding of the information given, and their reaction/beliefs/feelings about it	8 (53)	8 (62)
Tells the patient that they are central to the management of their own condition: that self-management of osteoarthritis is necessary and important	13 (87)	11 (85)
Explains that the central role of the primary healthcare team in the management of osteoarthritis is to support and guide self-management	7 (47)	9 (69)
Explains the purpose of managing osteoarthritis to: improve understanding, reduce pain, improve mobility and reduce the risk of it getting worse	9 (60)	12 (86)
Explains the approach to the treatment of osteoarthritis recommended by NICE	3 (20)	8 (62)
In addition to handing out the guidebook highlights sections in the guidebook relevant to the patient's problem	6 (40)	6 (46)
Asks if the patient has any views/preferences for what treatment they might want to consider next, and, if they do, what they are	12 (80)	6 (43)
Takes an "exercise history": the patient's attitude to taking exercise/physical activity/exercises and their experience of these	9 (60)	6 (43)
Takes a "weight history": the patient's attitude to losing weight and their prior experience of doing this	7 (47)	9 (69)
Indicates, if the patient is overweight, where they are on a body mass index chart	7 (47)	9 (69)

**Table 4 Statements excluded from the model OA consultation (Continued)**

Explains that exercise may cause muscle soreness initially and that the benefits of exercise may not be immediate	9 (60)	5 (38)
Explains the risks and benefits of painkillers	11 (73)	6 (50)
Discusses with the patient whether any other extra treatment needs to be considered	7 (47)	8 (67)
Discusses appropriate referrals, for example to; physiotherapy, occupational therapy, podiatry, social services, community pharmacy, district nursing service or work support services	8 (53)	10 (71)
Discusses the option of joint replacement surgery in patients with established severe pain, or severe functional limitation, in addition to core treatments and painkillers	7 (47)	7 (54)
Formulates with the patient a self-management plan	11 (73)	10 (77)
Explains when the patient should re-consult the GP	11 (73)	8 (57)

\* "The GP" is the stem for all the statements.

not been published. Standard textbooks on clinical methods [21,22] are focused primarily on the examination rather than history taking and do not cover in detail the assessment of peripheral joints in older people. A textbook on the 10-minute clinical assessment [23] includes, in the section on the assessment of knee pain, many of the tasks with a high level of agreement for inclusion in our model OA consultation such as eliciting ideas and concerns, taking a "pain history" and understanding the effect of the problem on mobility and work.

The two tasks given the highest priority, those which all the participants from both groups included, concerned the pharmacological management of pain. However, they did not prioritise psycho-social tasks such as assessing mood and asking about social circumstances, suggesting that both groups favoured a bio-medical approach to the initial consultation rather than a biopsychosocial one. This suggests a discordance between "current thinking" of practising GPs, and patients, and "current best thinking" from research evidence, which suggests that an integrated biopsychosocial approach should be adopted for OA [6]. Possible reasons for this discordance might be; the dominance of the practicalities of achieving something in the 10 minutes of a consultation, the GPs' lack of awareness of this research, the influence of the prevalent bio-medical approach to osteoarthritis [24,25], that the relevance of psychosocial management to clinical management of OA has yet to be established or GPs' perceptions of clinical priorities in a first consultation for such a problem. Concerning the last point, similar patient views supporting a biomedical approach for initial consultations for a problem have been identified previously in other clinical areas; for example Calnan et al [26]. found that patients' explanations for upper limb disorders were initially biomechanical, with psychosocial explanations only being invoked when these

were no longer appropriate. Neither of the two groups in our study prioritised tasks eliciting patient expectations, which is counter to a patient-centred approach propounded in the biopsychosocial approach, or in current notions of the "patient-as-person", sharing power and responsibility and therapeutic alliance [27].

### Strengths and limitations

The inclusion of patients in the consensus exercise represents a particular strength of this study. The levels of agreement for the statements were lower and more varied in the patient group than the GP group and, by "setting the bar" at the same level for both groups, the GP group contributed more tasks to the model than the patient group. However, the majority of the patient group was in favour of including all the 25 consultation tasks in the model and lowering the bar in the patient group to 80% would only have included two additional tasks. The response in the GP group was low, but this was in line with responses in other studies with GPs as participants [28] and still resulted in 15 GPs completing the consensus exercise, a number which has been shown to be sufficient for such exercises [14]. The participating GPs may not have the same views as GPs as a whole, as they all declared a special interest in musculoskeletal disorders, but it does seem reasonable to use the views of "specialist" GPs when evidence suggests that GPs in general have not fully engaged with the management of OA.

The tasks which the consensus groups prioritised produced a model that had a bio-medical focus and was not fully patient-centred – "eliciting patient expectations" for example was not included – and obtaining this result could be seen as a weakness of a methodology to develop a patient-centred consultation. However, the patient group could have, but did not, prioritise "patient



expectations", suggesting that for this group such an aspect of the consultation was not an essential feature of patient centredness, and our aim was to elicit consensus around current views of patients and professionals on consulting for OA as an important starting point when planning how to implement change.

### Implications for future research and clinical practice

The consensus exercise was undertaken in the context of the development of an approach to the management of OA to be used in an intervention study investigating how to implement best primary care for OA. The consensus we have obtained will form part of the framework, together with other clinical, scientific, guideline and policy evidence, in shaping the final content of a model for the initial consultation between a GP and a patient presenting with peripheral joint pain for use in the implementation study. These insights from the consensus exercise, into current GP and patient opinion on priorities for such a consultation will be used to inform the development of the training programme in the study.

More generally, the results of this consensus study can inform primary care training for OA management. Although the context of day-to-day practice is different from that used in the consensus exercise, for example the provision of a specially trained healthcare professional to support the self-management of OA is not generally provided in clinical practice currently, many of the tasks which were identified for inclusion in the model OA consultation do not rely on such a service being available and would be relevant to current clinical practice.

### Conclusion

This study has identified current consensus of a group of GPs and patients on the content of a model OA consultation for primary care. Overall 25 tasks, covering assessment and initial management of OA, were identified for inclusion in the model. The model OA consultation will need to be shaped for use in clinical practice and for investigating how to implement the NICE OA Guidelines in practice.

### Competing interests

The authors have no competing interests to declare.

### Authors' contributions

All authors have made substantial contributions to the development of the study, analysing the data, drafting and revising the manuscript and have given final approval for this version to be published. In addition, MP carried out the data collection for the study.

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### References

1. Peat G, McCarney R, Croft P: Knee pain and osteoarthritis in older adults: a review of community burden and current use of primary health care. *Ann Rheum Dis* 2001, **60**(2):91-97.
2. American College of Rheumatology Subcommittee on Osteoarthritis Guidelines: Recommendations for the medical management of osteoarthritis of the hip and knee: 2000 update. *Arthritis Rheum* 2000, **43**(9):1905-1915.
3. Jordan KM, Arden NK, Doherty M, Bannwarth B, Bijlsma JW, Dieppe P, EULAR Recommendations 2003, et al: An evidence based approach to the management of knee osteoarthritis: Report of a Task Force of the Standing Committee for International Clinical Studies Including Therapeutic Trials (ESCISIT). *Ann Rheum Dis* 2003, **62**(12):1145-1155.
4. Zhang W, Doherty M, Leeb BF, Alekseeva L, Arden NK, Bijlsma JW, et al: EULAR evidence based recommendations for the management of hand osteoarthritis: report of a Task Force of the EULAR Standing Committee for International Clinical Studies Including Therapeutics (ESCISIT). *Ann Rheum Dis* 2007, **66**(3):377-388.
5. Zhang W, Moskowitz RW, Nuki G, Abramson S, Altman RD, Arden N, et al: OARSI recommendations for the management of hip and knee osteoarthritis, Part II: OARSI evidence-based, expert consensus guidelines. *Osteoarthritis Cartilage* 2008, **16**(2):137-162.
6. National Collaborating Centre for Chronic Conditions: *Osteoarthritis: national clinical guideline for care and management in adults*. London: Royal College of Physicians; 2008.
7. Zhang W, Doherty M, Arden N, Bannwarth B, Bijlsma J, Gunther KP, et al: EULAR evidence based recommendations for the management of hip osteoarthritis: report of a task force of the EULAR Standing Committee for International Clinical Studies Including Therapeutics (ESCISIT). *Ann Rheum Dis* 2005, **64**(5):669-681.
8. Jinks C, Ong BN, Richardson JC: A mixed methods study to investigate needs assessment for knee pain and disability Population and individual perspectives. *BMC Musculoskelet Disord* 2007, **8**:59.
9. Grime J, Richardson JC, Ong BN: Perceptions of joint pain and feeling well in older people who reported being healthy: a qualitative study. *Br J Gen Pract* 2010, **60**(577):597-603.
10. Porcheret M, Jordan K, Jinks C, Croft P: Primary Care Rheumatology Society. Primary care treatment of knee pain-a survey in older adults. *Rheumatology (Oxford)* 2007, **46**(11):1694-1700.

11. Broadbent J, Maisey S, Holland R, Steel N: **Recorded quality of primary care for osteoarthritis: an observational study.** *Br J Gen Pract* 2008, **58**(557):839–843.
12. Steel N, Bachmann M, Maisey S, Shekelle P, Breeze E, Marmot M, et al: **Self reported receipt of care consistent with 32 quality indicators: national population survey of adults aged 50 or more in England.** *Br Med J* 2008, **337**:a957.
13. Silverman J, Kurt S, Draper J: *Skills for Communicating with Patients*. 2nd edition. Oxford: Radcliffe Publishing; 2005.
14. Murphy MK, Black NA, Lamping DL, McKee CM, Sanderson CF, Askham J, et al: **Consensus development methods, and their use in clinical guideline development.** *Health Technol Assess* 1998, **2**(3):1–88.
15. Mazieres B, Bannwarth B, Dougados M, Lequesne M: **EULAR recommendations for the management of knee osteoarthritis Report of a task force of the Standing Committee for International Clinical Studies Including Therapeutic Trials.** *Joint Bone Spine* 2001, **68**(3):231–240.
16. Tuckett D, Boulton M, Olson C, Williams A: *Meeting between experts: an approach to sharing ideas in medical consultations*. Bungay, Suffolk: The Chaucer Press; 1985.
17. Pill J: **The Delphi method: substance, context, a critique and the annotated bibliography.** *Socioecon Plann Sci* 1971, **5**:57–71.
18. The Royal College of General Practitioners: *Curriculum Statement 2: The General Practice Consultation version 1.2. 2011 July*. [cited 2012 Mar 08]. Available from [http://www.rcgp-curriculum.org.uk/PDF/curr\\_2\\_The\\_GP\\_Consultation.pdf](http://www.rcgp-curriculum.org.uk/PDF/curr_2_The_GP_Consultation.pdf).
19. Chassany O, Boureau F, Liard F, Bertin P, Serrie A, Ferran P, et al: **Effects of training on general practitioners' management of pain in osteoarthritis: a randomized multicenter study.** *J Rheumatol* 2006, **33**(9):1827–1834.
20. Ravaud P, Flipo RM, Boutron I, Roy C, Mahmoudi A, Giraudeau B, et al: **ARTIST (osteoarthritis intervention standardized) study of standardised consultation versus usual care for patients with osteoarthritis of the knee in primary care in France: pragmatic randomised controlled trial.** *Br Med J* 2009, **338**:b421.
21. Bickley L, Szilagyi P: *Bate's Guide to Physical Examination and History Taking*. 10th edition. Philadelphia: Wolters Kluwer Health; 2009.
22. Swash M, Glynn M: *Hutchinson's Clinical Methods*. 22nd edition. London: Saunders Elsevier; 2007.
23. Schroeder K: *The 10-Minute Clinical Assessment*. 1st edition. Chichester: Wiley-Blackwell; 2010.
24. Dieppe P: **Developments in osteoarthritis.** *Rheumatology (Oxford)* 2011, **50**(2):245–247.
25. Dziedzic KS, Hill JC, Porcheret M, Croft PR: **New models for primary care are needed for osteoarthritis.** *Phys Ther* 2009, **89**(12):1371–1378.
26. Calnan M, Wainwright D, O'Neill C, Winterbottom A, Watkins C: **Making sense of aches and pains.** *Fam Pract* 2006, **23**:91–105.
27. Mead N, Bower P: **Patient-centredness: a conceptual framework and review of the empirical literature.** *Soc Sci Med* 2000, **51**:1087–1110.
28. Creavin ST, Creavin AL, Mallen CD: **Do GPs respond to postal questionnaire surveys? A comprehensive review of primary care literature.** *Fam Pract* 2011, **28**(4):461–467.

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METHODOLOGY

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# Development of a behaviour change intervention: a case study on the practical application of theory

Mark Porcheret<sup>1\*</sup>, Chris Main<sup>1</sup>, Peter Croft<sup>1</sup>, Robert McKinley<sup>2</sup>, Andrew Hassell<sup>2</sup> and Krysia Dziedzic<sup>1</sup>

## Abstract

**Background:** Use of theory in implementation of complex interventions is widely recommended. A complex trial intervention, to enhance self-management support for people with osteoarthritis (OA) in primary care, needed to be implemented in the Managing Osteoarthritis in Consultations (MOSAICS) trial. One component of the trial intervention was delivery by general practitioners (GPs) of an enhanced consultation for patients with OA. The aim of our case study is to describe the systematic selection and use of theory to develop a behaviour change intervention to implement GP delivery of the enhanced consultation.

**Methods:** The development of the behaviour change intervention was guided by four theoretical models/frameworks: i) an implementation of change model to guide overall approach, ii) the Theoretical Domains Framework (TDF) to identify relevant determinants of change, iii) a model for the selection of behaviour change techniques to address identified determinants of behaviour change, and iv) the principles of adult learning. Methods and measures to evaluate impact of the behaviour change intervention were identified.

**Results:** The behaviour change intervention presented the GPs with a well-defined proposal for change; addressed seven of the TDF domains (*e.g.*, knowledge, skills, motivation and goals); incorporated ten behaviour change techniques (*e.g.*, information provision, skills rehearsal, persuasive communication); and was delivered in workshops that valued the expertise and professional values of GPs. The workshops used a mixture of interactive and didactic sessions, were facilitated by opinion leaders, and utilised 'context-bound communication skills training.' Methods and measures selected to evaluate the behaviour change intervention included: appraisal of satisfaction with workshops, GP report of intention to practise and an assessment of video-recorded consultations of GPs with patients with OA.

**Conclusions:** A stepped approach to the development of a behaviour change intervention, with the utilisation of theoretical frameworks to identify determinants of change matched with behaviour change techniques, has enabled a systematic and theory-driven development of an intervention designed to enhance consultations by GPs for patients with OA. The success of the behaviour change intervention in practice will be evaluated in the context of the MOSAICS trial as a whole, and will inform understanding of practice level and patient outcomes in the trial.

**Keywords:** Behaviour change intervention, Theory, General practice, Osteoarthritis, Complex intervention, Implementation, Consultation, General practitioners, Communication skills

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## Background

Osteoarthritis (OA) is a highly prevalent condition in general practice, and guidance on its management is available [1-6]. Published surveys of current practice have identified that care is not being delivered as recommended in this guidance, indicating that there is a need to improve and optimise primary care of people with OA [7-9].

The case study described in this paper was a component of the Managing Osteoarthritis in Consultations (MOSAICS) trial [10], an investigation of the feasibility, acceptability and impact of implementing the National Institute for Health and Care Excellence (NICE) OA Guideline [2]. The main aim of the MOSAICS study was to test a complex patient-focused intervention (the 'trial intervention'), developed using the Whole Systems Informing Self-Management Engagement (WISE) model [11] and incorporating the three elements of that model: information for patients, professional responsiveness to patients' needs, and access to care. The three elements in the trial intervention were: i) an OA Guidebook developed with user involvement to provide patient-centred and evidence-based information [12], ii) an enhanced OA consultation by GPs and practice nurses, and iii) access to a practice-based nurse-led OA clinic (providing an initial 30-minute appointment and up to three further 20-minute appointments to provide support for self-management). The intervention was an evidence-based service for people who were 45 years or older presenting to the practice with a peripheral joint problem (Figure 1), designed to provide: i) relevant written information for patients, ii) support for patients to undertake muscle strengthening exercises, increase physical activity and, if applicable, lose weight, and iii) advice to patients on the appropriate use of analgesia. Its impact is to be evaluated at the level of the practice, for example prescribing patterns and the recording of clinical information, and at the level of the patient, for example uptake of NICE recommended treatments and pain.

The Medical Research Council's (MRC) updated guidance on the development and evaluation of complex interventions highlights the need to ensure successful

implementation of interventions in research settings, and that failure to do this can undermine the evaluation of the intervention being tested [13]. This often requires a change in clinical practice by those delivering the intervention, and there is a growing evidence base on developing, undertaking and evaluating interventions to effect specific changes in professional behaviour: behaviour change interventions [14]. One component of implementing the MOSAICS trial intervention was to enhance the consultation behaviour of the GPs delivering the trial intervention. This behaviour concerned diagnosis and initial management in line with the NICE OA Guideline when patients aged 45 years and over present with peripheral joint pain. This GP behaviour was the focus of the case study described here.

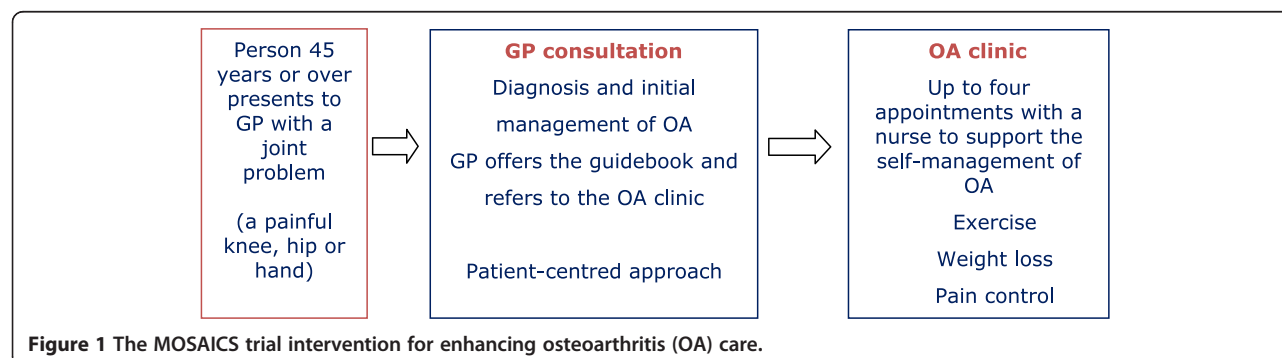
The use of theory to inform the development of behaviour change interventions is strongly advocated by experts in the field [15-17] and is often presented as a model or framework. In this paper, we use 'model' as shorthand for a theoretically derived model or framework. Our case study comprises a description of the systematic selection and use of models to inform development of a behaviour change intervention designed to change GP clinical practice during consultations with patients with OA.

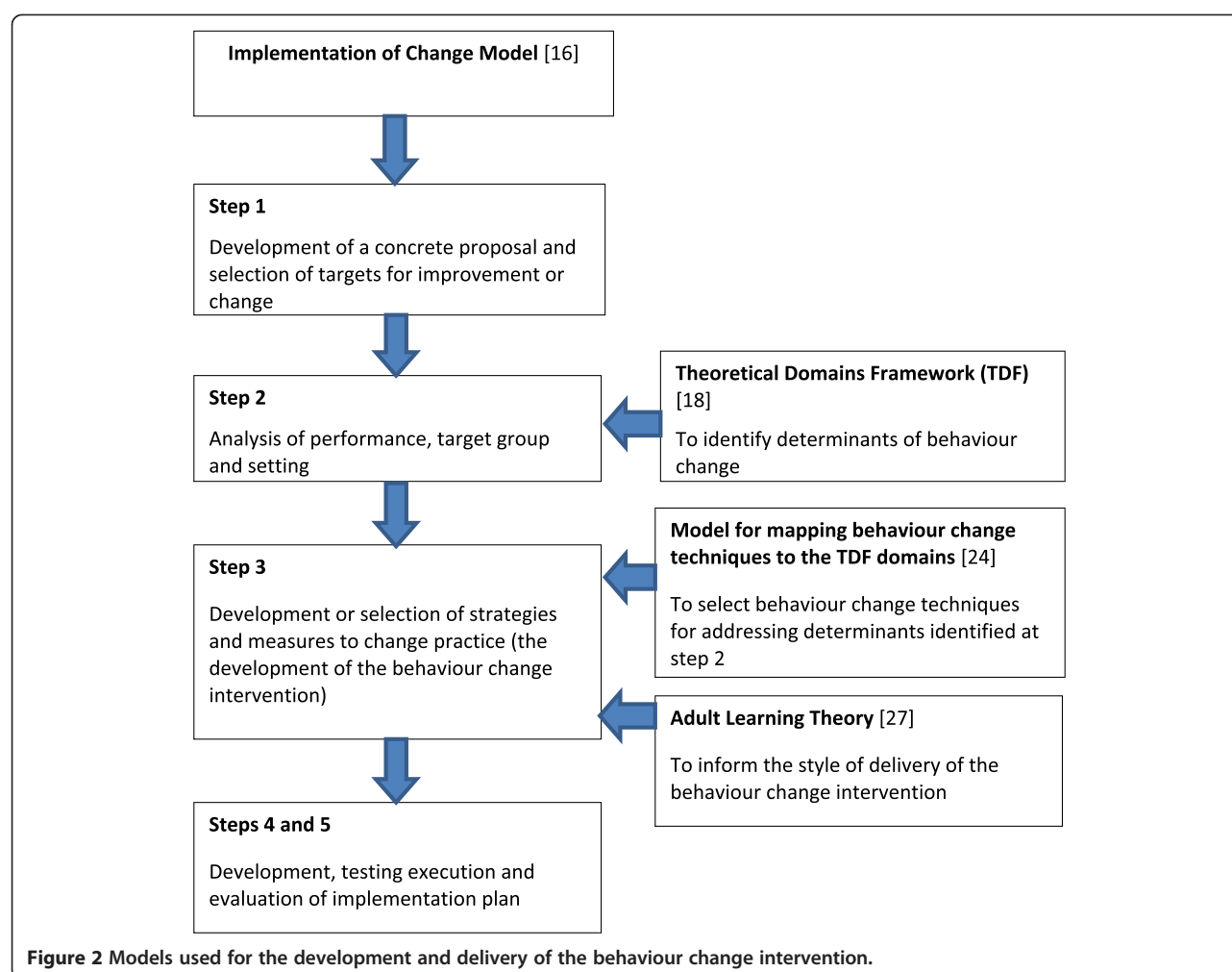
## Methods

Four models were selected for their ability to operationalize the aims of the MOSAICS study in relation to the behaviour desired of GPs in the study, and their order of use is shown in Figure 2.

### The implementation of change model

This model, developed by Grol and Wensing [16], was selected to inform the overall approach to developing the behaviour change intervention. It comprises five steps: first developing a 'concrete proposal' for the desired change, one that is clearly defined and easily understandable; second undertaking an analysis of current practice, and barriers and incentives for change, in the group in which change is desired; third developing and selecting ways to change practice; and finally (steps 4 and 5)





undertaking and evaluating the implementation plan (Table 1). Detailed guidance is available on how to approach the tasks needed for each step with reference to the underpinning evidence [16], and was selected as, in addition to its logical approach, it provides guidance on the answers to three very practical questions during the planning of change: ‘where do we want to be?’ (step 1), ‘where are we now?’ (step 2), and ‘how do we get there?’ (step 3).

### The theoretical domains framework

At step 2, a key task was to understand which factors, or ‘determinants,’ would impede or facilitate the intended change, and many psychologically-oriented models have been proposed to inform this task. Many of these models overlap, and each tends to focus on different aspects of the change process [16]. One challenge for those facilitating change is how to select the most appropriate model when undertaking an analysis of these factors in a particular set of circumstances. Michie *et al.* addressed this problem by undertaking a consensus exercise to

develop a model that encompassed 128 theoretical constructs (or determinants) included in 33 psychological theories - the Theoretical Domains Framework (TDF) [18]. The TDF consists of 12 domains (Table 2), such as knowledge, skills, beliefs about consequences, motivation and goals, with each domain having a set of theoretical constructs that had been identified as components in the models included in the consensus exercise. A total of 11 out of the 12 domains concern characteristics of the people for whom change is desired, with the 12<sup>th</sup> concerning the attributes of the change or desired behaviour itself. The TDF has been used to identify determinants of behaviour change for an extensive range of conditions and clinical situations, for example, mobilisation of older patients in hospital [19], utilisation of a rule for the use of CT scans for head trauma [20], and management of chronic obstructive airways disease [21], and its development and use in a range of other studies has been reviewed [22]. The TDF has been recently validated and refined: experts were asked to re-sort the constructs included in the TDF and to re-develop the domains,



**Table 1 Implementation of change model – adapted from Grol *et al.* [16]**

Step	Summary of activities
1	Development of a concrete proposal and targets for improvement or change <ul style="list-style-type: none"> <li>• Systematic development</li> <li>• Involvement of target group</li> <li>• Good 'product'</li> <li>• Accessible and attractive form</li> <li>• Opportunity for local adaptations</li> </ul>
2	Analysis of performance, target group and setting <ul style="list-style-type: none"> <li>• Stakeholders</li> <li>• Current practice</li> <li>• Barriers and incentives</li> <li>• Readiness to change of subgroups</li> </ul>
3	Development or selection of strategies and measures to change practice <ul style="list-style-type: none"> <li>• Tailored to target group and/or setting</li> <li>• Cost-effective mixture of techniques of proven value</li> <li>• Strategies for implementation</li> </ul>
4	Development, testing and execution of implementation plan
5	Evaluate and, where necessary, adapt plan

with and without reference to the original domains [23]. The refined framework consists of 14 domains, 8 unchanged from the original, 6 derived from a more specific grouping of the constructs underpinning 3 of the domains (beliefs about capabilities, beliefs about consequences, and motivation and goals), with 1 of the original domains omitted (nature of the behaviour). The 12-domain TDF model was selected as the domains in this framework provided a practical and comprehensive list of possible

determinants of behaviour change (the 14-domain model had yet to be developed at the time of this study), and the TDF was utilised to identify relevant determinants of behaviour change in this study.

### Model for mapping behaviour change techniques to the TDF domains

At step 3, one of our tasks was to develop or select techniques to effect behaviour change. Michie *et al.* developed a model to inform the selection of behaviour change techniques that target the determinants described in the TDF [24]. They identified, and defined, a set of behaviour change techniques described in the literature and mapped them to the domains in the TDF described above (barring the 12<sup>th</sup> domain): the techniques that they judged to be effective in changing behaviour for each domain [24]. The approach to mapping behaviour change techniques to TDF domains has been incorporated into protocols for the development of complex interventions, for example for tobacco counselling in dentistry [25] and management of low back pain [26]. This mapping process provides a practical tool for selecting appropriate behaviour change techniques as the components of a behaviour change intervention and was utilised at step 3.

### Adult learning theory

At step 3, the principles of adult learning theory were also utilised; that adults are internally motivated and self-directed, bring life experiences and knowledge to learning experiences, are goal and relevancy oriented, are practical and like to be respected [27]. Adult learning theory was selected to inform the educational process of the behaviour change intervention as it has a well-established role in development of courses to support continuing professional development [27], including interventions such as the one developed in this study.

**Table 2 Theoretical Domains Framework adapted from Michie *et al.* [18]**

TDF Domain	Example of use of domain when assessing target group concerning a behaviour change 'X'
Knowledge	Are they aware of X?
Skills	Do they know how to do X?
Social/professional role and identity	Is X compatible with professional identity?
Beliefs about capabilities	How confident are they that they can do X?
Beliefs about consequences	What do they think will happen if they do X?
Motivation and goals	How much do they want to do X?
Memory, attention and decision processes	Will they remember to do X?
Environmental context and resources	Are there physical or resource factors which will facilitate or hinder X?
Social influences	Will they observe others doing X?
Emotion	Does X evoke an emotional response?
Behavioural regulation	What preparatory steps are needed to do X?
Nature of the behaviour	How understandable is X?

## Applying the models

### **Step 1 – development of a concrete proposal for change**

The behaviour change required of the GPs was the delivery of an enhanced OA consultation (see Figure 1). A consensus exercise was undertaken with healthcare professionals to develop a model for the OA consultation [28]. Subsequent to this, two activities were undertaken. Firstly, the characteristics of the consensus model OA consultation were compared with characteristics known to promote or hinder the implementation of an innovation [16]. Secondly, three general practice advisory groups were formed – two consisting of GPs with research or teaching roles at Keele University and one consisting of members of the primary healthcare team in a local general practice – and meetings arranged. The meetings were audiotaped and field notes made. The model OA consultation was presented to the groups and their views and understanding obtained. From the results of the comparison and feedback from the advisory groups, the model consultation was refined to enhance uptake by GPs.

### **Step 2 – analysis of performance, target group and setting**

The advisory groups, at the same meetings as arranged for step 1, were asked about: i) their current management of OA, ii) their awareness of, and agreement with, the NICE OA Guideline, and iii) any gaps perceived between their current practice and that recommended by NICE and in the model consultation. In addition, they were asked to suggest which barriers and/or incentives might be relevant to implementing the model consultation in practice. Their responses were mapped by the study team to the domains in the TDF.

### **Step 3 – development or selection of strategies and measures to change practice**

There were four phases to the development of the behaviour change intervention: defining content, selecting behaviour change techniques, deciding on style of delivery, and addressing local practicalities. The content was developed by the study team informed by the views of GPs from step 2. The mapping of behaviour change techniques to TDF domains was utilised to select the techniques to address domains identified in step 2. Adult learning principles and Cochrane Effective Practice and Organisation of Care Group's reviews [29] were used to decide on style of delivery. Practical issues, such as venues, timings and duration of meetings, how best to deliver the behaviour change intervention, and what was feasible in the MOSAICS study, were addressed by the study team in consultation with general practices in the study.

### **Steps 4 and 5 – development, testing and execution of the implementation plan, and its evaluation**

The GP behaviour change intervention was undertaken as part of the MOSAICS study in practices randomised to the intervention arm of the study. Methods and measures were developed to evaluate the behaviour change intervention at five levels: satisfaction with delivery of the behaviour change intervention, mediators of change, self-reported intended behaviour, competency to undertake the behaviour (undertaking the behaviour in a controlled situation [30]), and performance in undertaking the behaviour in day-to-day practice.

## Results

### **Step 1 – development of a concrete proposal for change**

The model OA consultation, developed by the consensus exercise, consisted of 25 tasks addressing: i) assessment of chronic joint pain, ii) patient's ideas and concerns, iii) exclusion of red flags, iv) examination, v) provision of the diagnosis and written information, vi) promotion of exercise and weight loss, vii) initial pain management, and viii) arrangement of a follow-up appointment [28].

The advisory group meetings were led by one of the authors (MP) and attended by 15 GPs, 5 practice nurses, and a practice manager. The key finding from the meetings on the characteristics of the model OA consultation was that, presented as 25 tasks, it was too complex to explain simply and quickly to GPs or for them to easily understand and translate into day-to-day practice. To simplify the model, tasks were grouped by core elements of a patient-centred consultation [11,31,32], for example support for self-care and provision of evidence-based information, and the model succinctly presented as three tasks.

1. To make, give and explain the diagnosis.
2. To provide analgesia advice/prescription.
3. To promote and support self-management.

### **Step 2 – analysis of performance, target group and setting**

The advisory group meeting transcripts and field notes on current practice, attitudes to recommended best practice, and perceived barriers to, and incentives for, changing practice, were analysed using the TDF as a coding framework. The analysis was discussed by the study team and by a group of expert educational advisors to the study, and seven TDF domains were identified as relevant to changing GP practice in OA consultations (Table 3).

### **Step 3 – development or selection of strategies and measures to change practice**

The content of the behaviour change intervention was derived by the study team from the practical requirements of delivering the model OA consultation and

**Table 3 Determinants for implementing the enhanced OA consultation ordered by Theoretical Domains Framework (TDF) domain**

TDF domain	Aspects of domain identified in target group analysis
Knowledge	The epidemiology and impact of OA, the recommendations of the NICE OA Guideline, the rationale for GPs providing support for the self-management of OA and that of making the diagnosis of OA clinically, details of the MOSAIC study procedures
Skills	The skills needed to make the diagnosis of OA clinically, and those for delivering the model OA consultation
Social/professional role and identity	The credibility of NICE guidance in general and specifically of NICE OA guidance, and the GP's role in providing support for self-management
Beliefs about capabilities	The time to deliver the model OA consultation in day-to-day practice, and any previous difficulties in managing OA
Beliefs about consequences	The GPs' doubts about the efficacy of OA interventions recommended by NICE OA guidance
Motivation and goals	That OA and its management was not considered a high priority by the GPs, compared with other areas of general practice
Memory, attention and decision processes	The GPs remembering to undertake the model OA consultation in day-to-day practice, when an older adult presents with peripheral joint pain

from gaps identified in the advisory group meetings, for example lack of knowledge about the impact of OA on the individual, the skills necessary to deliver the model OA consultation, and the credibility of NICE guidelines. The selection of behaviour change techniques was undertaken by the study team and the educational advisors to the study. The starting point was the list of techniques that Michie *et al.* had judged appropriate to effect change for domains identified in step 2 [24]. The group used their research, clinical and educational experience to decide which of these techniques to choose. The content of, and techniques to address, each domain are detailed in Table 4.

The choice of delivery style was informed by evidence from the Cochrane Effective Practice and Organisation of Care Group on the effectiveness of strategies for changing practice, with a specific emphasis on small group learning with a mixture of didactic and interactive sessions [33] and facilitated by opinion leaders [34]. In addition, the study team drew on evidence on a learner-centred approach, which utilises prior knowledge and experiences of the participants [27] to effect change in behaviour. Specifically, for the delivery of techniques to address the skills domain, we used empirical evidence on techniques for training experienced GPs in communication skills, a method of training known as 'context-bound communication skills training' was adopted [35]. In this technique the 'context,' in this case the management of OA, is in the foreground and the communication training in the background. A key feature is that participants practise consultation skills when consulting with simulated patients and receive feedback. This had been found to be a feasible, acceptable and effective method of enhancing the consultation skills of experienced practitioners [36] and preferable, for this group, to the approach

taken in undergraduate skills teaching, where it is skill and not context that is in the foreground.

The final step was to consider the practical issues in delivering the workshops in four general practices with all the myriad demands on the GPs' and other practice staff's time. The final format was developed by the study team and educational advisors, drawing on their professional experience, and in consultation with GPs working in Keele University Medical School. The format was to deliver the behaviour change intervention at general practices' premises, in four sessions, lasting one or two hours each, and about two to three weeks apart. The final behaviour change intervention with detailed timings is shown in Table 5.

#### Steps 4 and 5 – development, testing and execution of the implementation plan, and its evaluation

All the GPs, practices nurses, and administrative staff working in the four practices randomised to the intervention arm of the MOSAICS study, were invited to attend the training sessions (see Table 5 for details) [10]. The GPs were invited to participate in the evaluation of the behaviour change intervention. Methods and measures were chosen and developed to evaluate the behaviour change intervention at the four levels (Table 6).

#### Discussion

The utilisation of the Grol and Wensing Implementation of Change Model, the Theoretical Domains Framework, and the model for mapping behaviour change techniques to the TDF domains have enabled a systematic and theory-driven approach to be taken to the development of an intervention to change clinical practice for the management of OA by GPs, and measures to



**Table 4 Content of behaviour change intervention and behaviour change techniques by relevant domains of the Theoretical Domains Framework (TDF)**

TDF domain	Behaviour change intervention content	Techniques for behaviour change chosen to address domain
Knowledge	Burden/prognosis/pathophysiology of OA, experience of patients with OA of general practice  NICE OA guidance, efficacy OA treatments  Rationale for making the diagnosis of OA clinically and for giving the diagnosis  Rationale for self-care of OA, support for self-care and patient centre consulting  OA Guidebook and the model OA consultation	Information provision to address gaps in knowledge about: <ul style="list-style-type: none"><li>• The nature and management of OA</li><li>• NICE OA recommendations</li><li>• The model OA consultation</li></ul>
Skills	Assessing ideas/concerns and expectations/treatment preferences  Making a clinical diagnosis of OA  Giving the diagnosis/explaining OA and its treatment (use of language)  Use of NICE recommended treatments  Promoting OA Guidebook and nurse follow-up appointment	Rehearsal of relevant skills; graded task starting with easy tasks; increasing skills (problem-solving) to: <ul style="list-style-type: none"><li>• Enhance GP consultation skills for OA</li></ul>
Social/professional role and identity	Attitudes to guidelines and NICE OA guidance  Attitudes to support for self-care (potential conflict between professional care and self-care)	Social process of encouragement, pressure and support to: <ul style="list-style-type: none"><li>• Engender a positive approach to guideline implementation and support for self-care</li></ul>
Beliefs about capabilities	Time to do it  Other priorities in consultation  Discussion about problems with managing OA/what would help to better manage it	Social processes of encouragement, pressure, support to: <ul style="list-style-type: none"><li>• Enhance perceived ability to deliver the model OA consultation</li></ul>
Beliefs about consequences	Discussion on beliefs about consequences of OA interventions and model OA consultation	Information provision; persuasive communication to: <ul style="list-style-type: none"><li>• Counter perceived lack of efficacy of interventions for OA</li></ul>
Motivation and goals	Presentation of MOSAIC study payments  Provision of practice nurse training and a lifestyle change intervention	Contract; rewards; persuasive communication to: <ul style="list-style-type: none"><li>• Sign GPs up to delivering the model OA consultation</li></ul>
Memory attention and decision processes	Model OA Consultation Aide Memoire	Prompts, triggers, cues to: <ul style="list-style-type: none"><li>• Prompt delivery if model OA consultation in day-to-day practice</li></ul>

evaluate its impact. This proved to be a practical way of using theory to inform, rather than just inspire, the development of a complex intervention, an approach that is widely advocated but reportedly not always taken [15,38-40].

The Grol and Wensing model did enable us to answer the three questions 'where do we want to be?', 'where are we now?', and 'how do we get there?' – a task that is recommended in the MRC guidance on complex interventions: that researchers can fully describe important components of the overall intervention and can implement them in the research setting [13]. The use of the TDF at step 2, and

behaviour change technique mapping at step 3, enabled identification of relevant determinants of change in the GP behaviour component of the main trial, and behaviour change techniques to address them, within specific theoretical frameworks. It also enabled the purpose of each item of the behaviour change intervention to be understood, for example information giving to address gaps in knowledge about OA, rehearsal and feedback to enhance consultation skills.

In addition to theory, empirical evidence and practical considerations, on style and mode of delivery, informed

**Table 5 Workshop schedules to deliver the behaviour change intervention for GPs in the MOSAICS trial**

**Workshop 1 – attendees: Primary Health Care Team from a single practice (GPs, practice nurses, practice manager<sup>1</sup>, receptionists<sup>1</sup>)**  
**Duration: 2 hours**

Time (minutes)	Activity
5	Introductions – facilitators and practice attendees.
20	How is OA managed, in your practice? Mapping practice, and local community and secondary care, resources for OA (interactive session with discussion recorded on flip chart).
25	OA knowledge update on: pathophysiology, definition and diagnosis, prevalence, prognosis and patient experience of OA (didactic session with discussion).
10	Information on: the NICE OA Guideline, support for self-management, the OA Guidebook, the model OA consultation (didactic session with discussion).
5	Break and non-clinical staff leave.
20	Presentation and discussion of case histories (GPs previously requested to bring). Difficulties in managing OA - what do GPs and nurses want from the sessions and what would aid them in managing OA (interactive session with issues recorded on flipchart and to be addressed in workshop 3).
25	Details of the model OA consultation - how to deliver it in day-to-day practice - GP and practice nurse roles. Aide-memoire introduced (didactic session with discussion).
10	Conclusion and outline of workshops 2 and 3. GPs given DVD of simulated patient consultation <sup>2</sup> and asked to view in preparation for workshop 2.

**Workshop 2 – Attendees: GPs from two practices.<sup>3</sup> Duration: 2 hours**

10	Introductions – facilitators and GPs. Reflection on, and unanswered questions from, workshop 1.
20	Discussion and reflection on video-recorded simulated patient OA consultations. Comparison between current practice and model OA consultation. Agenda for skills training agreed (interactive session with “agenda” recorded on flipchart).
10	Introduction to skills training: description of purpose and methods - the GPs were asked to work as a team trying out in turn bite-sized parts of the consultation with discussion and feedback from colleagues and facilitators (didactic session with discussion).
10	Break.
60	Skills training: working through the agenda set earlier. Particular emphasis on communication, use of language for giving and explaining the diagnosis and patient-centred approach (led by an experienced GP educator).
10	Reflection and conclusion. Aide-memoire discussed. Preparation for second video-recorded simulated patient consultation. <sup>4</sup> Outline of workshop 3.

**Workshop 3 – Attendees: GPs from two practices. Duration: 2 hours**

40	Knowledge update: addressing needs identified in workshop 1 and questions from GPs, and covering: diagnosing OA clinically and ‘top tips’ for managing OA (interactive session led by academic rheumatologist).
10	Discussion and reflection on 2nd video-recorded consultation. Agenda for skills training agreed (interactive session with “agenda” recorded on flipchart).
10	Break.

**Table 5 Workshop schedules to deliver the behaviour change intervention for GPs in the MOSAICS trial**

(Continued)

50	Skills training: as for workshop 2.
10	Conclusion and general reflection. Aide-memoire discussed. GPs invited to complete satisfaction questionnaires. Outline of workshop 4.

**Workshop 4 – Attendees: GPs and practice nurses from a single practice. Duration: 1 hour**

40	Action planning on delivery of the model OA consultation in the practice. Final version of the aide-memoire agreed.
10	Presentation of baseline data on OA consultations in the practice (an OA data collection template had been installed in the practices for the six months prior to the training).
10	Conclusion and thanks. Attendance certificates issued.

1 - For first hour only.

2 - All GPs were invited to undertake a video-recorded consultation with a simulated OA patient prior to workshop 1.

3 - GPs from two practices came together for workshops 2 and 3.

4 - All GPs were invited to undertake a 2nd video-recorded consultation between workshops 2 and 3.

development and ensured that the end product was evidence-based, feasible to deliver and acceptable to the recipients.

### Use of models to develop behaviour change interventions in other studies

The TDF and behaviour change technique mapping, developed by Michie *et al.*, have both been published within the last 10 years, and a number of studies have reported on utility and outcome in the development of behaviour change interventions for trials [26,41,42]. Both models, used sequentially as in this study, have been employed in development of interventions to improve management of low back pain [26], to enhance GP diagnosis of dementia [41], and to reduce antibiotic use for upper respiratory infections [42]. Two of these have resulted in multi-faceted interventions as developed in this study [26,41], with the other [42] resulting in two interventions, each specifically addressing one of two determinants of behaviour change identified. The research team in the low back pain study, having determined the behaviour change techniques to include in the intervention, and the mode of delivery, took a pragmatic approach to their final selection: what was locally feasible and acceptable. We also took a pragmatic approach on deciding the final format, but this did not result in any changes to our intended delivery other than that the workshops were run at the practices, lasted no more than two hours each, and were about two to three weeks apart. To date, only the low back pain trial has reported and showed a small effect on GP intention to practice but no significant change in actual behaviour [43]. That clinical practice was not observed to change may not have been due to the intervention per se, as there were

**Table 6 Methods and measures to evaluate the behaviour change intervention**

Evaluation level	Method	Measure
Satisfaction with workshops (delivery of behaviour change intervention).	Questionnaire administered at the end of workshop 3.	Level 1 Kirkpatrick educational outcomes [37], such as level of enjoyment, views on content and confidence in delivering the model OA consultation.
Intention to practise.	Questionnaire administered before and twice after (at one month and five months after) the behaviour change intervention.	Vignette of an older adult presenting with joint pain and options for assessment and management.
Mediators of change.	Questionnaire administered before and twice after (at one month and five months after) the behaviour change intervention.	Statements based on TDF* domains identified at step 2, for example "How much do you think exercise and increasing physical activity by people with osteoarthritis will improve their pain (beliefs about consequences).
Competency in delivering the model OA consultation.	Video-recordings of the GPs undertaking a consultation with simulated OA patients were made before and twice after (at one and five months after) the behaviour change intervention.	Videos were assessed for the presence of specific behaviours necessary for the delivery of the model OA consultation.
Performance in delivering the model OA consultation.	Patient report: patients who attended the MOSAICS study nurse-led OA clinic were asked to report on the content of the previous GP consultation.	Four aspects of the consultation, did the GP: elicit ideas about the problem, give the diagnosis, explain the diagnosis, hand out the guidebook?

\*Theoretical Domains Framework.

logistical problems in getting GPs to attend the intervention workshops and methodological problems in assessing outcome. The drive to use theory to inform development of interventions has been questioned [44], as empirical evidence is lacking on effectiveness of interventions developed in this way. Although the low back pain trial did not demonstrate a change in clinical practice, its use of theory does add to empirical evidence on the process of behaviour change.

### Strengths and possible limitations

Developing complex interventions is a complex task in itself, and understanding how to approach it in a systematic way, informed by relevant theory, can be daunting for research teams [13]. The principal strength of the method described in this paper is that it enabled the MRC guidance on developing complex interventions to be operationalized systematically, and in a practical and do-able manner. The guidance on using the Grol and Wensing model to change clinical behaviour is extensive [16] and provided a very usable manual on 'how to do it.' The use of the TDF strengthens the approach advocated for the Grol and Wensing model for step 2, and is reflected in the increasing popularity of the TDF by research teams in developing interventions [22]. In addition, the recent validation and refining of the TDF domains has strengthened the rationale for its methodology, as used in this study, and, with a refined structure, strengthened its use in future studies [23].

The use of GP advisory group meetings both to gain views about the proposed change (step 1) and to undertake the target group analysis (step 2) was a practical strength. It provided an efficient method of: i) involving the target group in the development of the change proposal (an activity in its own right that enhances uptake of

an intervention [16]), ii) identifying which characteristics of the intervention might hinder or facilitate uptake, and iii) understanding current practice and identifying relevant determinants of change.

One potential limitation was that the topic guide for the advisory group meetings was not specifically developed from the TDF, which could have resulted in some of the TDF domains not being fully explored in the meetings. The topic guide had been developed, and the meetings undertaken, before deciding to use the TDF in step 2. However, the topic guide was broad and covered current management, views about recommended practice, and perceived gaps between current and recommended care and allowed for free discussion by the groups. This has occurred in other studies [21,45] and, although not used to develop the topic guide, the TDF did give an efficient method for analysing advisory group comments.

The GPs who attended advisory group meetings were not the same GPs who received the behaviour change intervention in the MOSAICS trial, and their views and attitudes may not have been the same as these GPs. Analysis of the actual target group for the behaviour change intervention – the GPs in the four MOSAICS intervention practices – may have identified different determinants to be addressed, but the timescale for developing the behaviour change intervention in the MOSAICS study did not allow for this. However, as the mode of delivery included interactive sessions, and the sessions encouraged reflection on current practice and on the video-recorded consultations, there was ample opportunity for issues specific to the study GPs to be addressed.

The final measure of success, beyond the fact that this methodology has provided the framework for an intervention deliverable in practice, is whether it achieved what it set out to (a change in clinical practice) in a

sufficient dose to achieve optimal outcomes for patients in the MOSAICS trial. Both these outcomes (intermediate professional-focused and ultimate patient-focused) will be reported in the future as part of the main results from the MOSAICS study.

## Conclusion

A stepped approach to the development of a professionally-focussed behaviour change intervention to implement a component of a trial intervention, with the utilisation of theoretical frameworks to identify determinants of change and match behaviour change techniques to these, has enabled the systematic and theory-driven development of an intervention to enhance the management of OA by GPs. The success of the behaviour change intervention will be evaluated in the context of the MOSAICS trial, and will inform the understanding of practice level and patient outcomes in the trial.

## Competing interests

None of the authors have any competing interests to declare.

## Authors' contributions

MP developed the methodology, facilitated the advisory groups, undertook the data analysis and drafted the manuscript. CM and KD participated in developing the methodology, facilitating the advisory groups, analysing data, and drafting the manuscript. PC, RMCK and AH participated in developing the methodology, analysing data, and drafting the manuscript. All authors read and approved the final manuscript.

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## References

1. Peat G, McCarney R, Croft P: Knee pain and osteoarthritis in older adults: a review of community burden and current use of primary health care. *Ann Rheum Dis* 2001, **60**(2):91-97.
2. Conaghan PG, Dickson J, Grant RL, Guideline DG: Care and management of osteoarthritis in adults: summary of NICE guidance. *BMJ* 2008, **336**(7642):502-3.
3. Zhang W, Doherty M, Arden N, Bannwarth B, Bijlsma J, Gunther KP, Hauselmann HJ, Herrero-Beaumont G, Jordan K, Kalamani P, Leeb B, Lequesne M, Lohmander S, Mazieres B, Martin-Mola E, Pavelka K, Pendleton A, Punzi L, Swoboda B, Varatojo R, Verbruggen G, Zimmermann-Gorska I, Dougados M, EULAR Standing Committee for International Clinical Studies Including Therapeutics (ESCISIT): EULAR evidence based recommendations for the management of hip osteoarthritis: report of a task force of the EULAR standing committee for international clinical studies including therapeutics (ESCISIT). *Ann Rheum Dis* 2005, **64**(5):669-681.
4. Zhang W, Doherty M, Leeb BF, Alekseeva L, Arden NK, Bijlsma JW, Dincer F, Dziedzic K, Hauselmann HJ, Herrero-Beaumont G, Kalamani P, Lohmander S, Maheu E, Martin-Mola E, Pavelka K, Punzi L, Reiter S, Sautner J, Smolen J, Verbruggen G, Zimmermann-Gorska I: EULAR evidence based recommendations for the management of hand osteoarthritis: report of a task force of the EULAR standing committee for international clinical studies including therapeutics (ESCISIT). *Ann Rheum Dis* 2007, **66**(3):377-388.
5. Jordan KM, Arden NK, Doherty M, Bannwarth B, Bijlsma JW, Dieppe P, Gunther K, Hauselmann H, Herrero-Beaumont G, Kalamani P, Lohmander S, Leeb B, Lequesne M, Mazieres B, Martin-Mola E, Pavelka K, Pendleton A, Punzi L, Serni U, Swoboda B, Verbruggen G, Zimmermann-Gorska I, Dougados M, Standing Committee for International Clinical Studies Including Therapeutic Trials ESCISIT: EULAR recommendations 2003: an evidence based approach to the management of knee osteoarthritis: report of a task force of the standing committee for international clinical studies including therapeutic trials (ESCISIT). *Ann Rheum Dis* 2003, **62**(12):1145-1155.
6. Zhang W, Nuki G, Moskowitz RW, Abramson S, Altman RD, Arden NK, Bierma-Zeinstra S, Brandt KD, Croft P, Doherty M, Dougados M, Hochberg M, Hunter DJ, Kwoh K, Lohmander LS, Tugwell P: OARS recommendations for the management of hip and knee osteoarthritis: part III: changes in evidence following systematic cumulative update of research published through January 2009. *Osteoarthritis Cartilage* 2010, **18**(4):476-499.
7. Broadbent J, Maisey S, Holland R, Steel N: Recorded quality of primary care for osteoarthritis: an observational study. *Br J Gen Pract* 2008, **58**(557):839-843.
8. Steel N, Bachmann M, Maisey S, Shekelle P, Breeze E, Marmot M, Melzer D: Self reported receipt of care consistent with 32 quality indicators: national population survey of adults aged 50 or more in England. *BMJ* 2008, **337**:a957.
9. Porcheret M, Jordan K, Jinks C, Croft P: Primary care rheumatology society: primary care treatment of knee pain—a survey in older adults. *Rheumatology (Oxford)* 2007, **46**(11):1694-1700.
10. Dziedzic K: Management of Osteoarthritis in Consultations Study: the development of a complex intervention in primary care (MOSAICS). 2011. UKCRN ID 10104 [http://public.ukcrn.org.uk/Search/StudyDetail.aspx?StudyID=10104]
11. Kennedy A, Rogers A, Bower P: Support for self-care for patients with chronic disease. *BMJ* 2007, **335**(7627):968-970.
12. Grime J, Dudley B: Developing written information on osteoarthritis for patients: facilitating user involvement by exposure to qualitative research. *Health Expect* 2011, **17**:164-173. doi:10.1111/j.1369-7625.2011.00741.x.
13. Craig P, Dieppe P, Macintyre S, Nazareth I, Petticrew M, Medical Research Council Guidance: Developing and evaluating complex interventions: the new medical research council guidance. *BMJ* 2008, **337**:a1655.
14. Eccles MP, Armstrong D, Baker R, Cleary K, Davies H, Davies S, Glasziou P, Iltott I, Kinmonth AL, Leng G, Logan S, Marteau T, Michie S, Rogers H, Rycroft-Malone J, Sibbald B: An implementation research agenda. *Implement Sci* 2009, **4**:18.
15. The Improved Clinical Effectiveness through Behavioural Research Group: Designing theoretically-informed implementation interventions. *Implementation Sci* 2006, **1**(1):4.
16. Grol R, Wensing M, Eccles M: *Improving Patient Care - The Implementation of Change in Clinical Practice*. 1st edition. London: Elsevier; 2004.
17. Michie S, van Stralen MM, West R: The behaviour change wheel: a new method for characterising and designing behaviour change interventions. *Implement Sci* 2011, **6**:42.
18. Michie S, Johnston M, Abraham C, Lawton R, Parker D, Walker A, on behalf of the "Psychological Theory" Group: Making psychological theory useful for implementing evidence based practice: a consensus approach. *Qual Saf Health Care* 2005, **14**(1):26-33.
19. Liu B, Almaawi U, Moore JE, Chan W, Straus SE, MOVE ON Team: Evaluation of a multisite educational intervention to improve mobilization of older patients in hospital: protocol for mobilization of vulnerable elders in Ontario (MOVE ON). *Implement Sci* 2013, **8**:76.
20. Curran JA, Brehaut J, Patey AM, Osmond M, Stiell I, Grimshaw JM: Understanding the Canadian adult CT head rule trial: use of the theoretical domains framework for process evaluation. *Implement Sci* 2013, **8**:25.
21. Johnston KN, Young M, Grimmer-Somers KA, Antic R, Frith PA: Why are some evidence-based care recommendations in chronic obstructive

- pulmonary disease better implemented than others? Perspectives of medical practitioners. *Int J Chron Obstruct Pulmon Dis* 2011, **6**:659–667.
22. Francis JJ, O'Connor D, Curran J: Theories of behaviour change synthesised into a set of theoretical groupings: introducing a thematic series on the theoretical domains framework. *Implement Sci* 2012, **7**:35.
  23. Cane J, O'Connor D, Michie S: Validation of the theoretical domains framework for use in behaviour change and implementation research. *Implement Science* 2012, **7**:37.
  24. Michie S, Johnston M, Francis J, Hardeman W, Eccles M: From theory to intervention: mapping theoretically derived behavioural determinants to behaviour change techniques. *Appl Psychol* 2008, **57**(4):660–680.
  25. Amemori M, Korhonen T, Kinnunen T, Michie S, Murtomaa H: Enhancing implementation of tobacco use prevention and cessation counselling guideline among dental providers: a cluster randomised controlled trial. *Implement Sci* 2011, **6**:13.
  26. French SD, Green SE, O'Connor D, McKenzie JE, Francis JJ, Michie S, Buchbinder R, Schattner P, Spike N, Grimshaw JM: Developing theory-informed behaviour change interventions to implement evidence into practice: a systematic approach using the theoretical domains framework. *Implement Sci* 2012, **7**:38.
  27. Brookfield S: *Understanding and Facilitating Adult Learning: A Comprehensive Analysis of Principles and Effective Practices*. 1st edition. Bury St Edmunds: Open University Press; 1986.
  28. Porcheret M, Grime J, Main C, Dziedzic K: Developing a model osteoarthritis consultation: a Delphi consensus exercise. *BMC Musculoskelet Disord* 2013, **14**:25.
  29. Cochrane Effective Practice and Organisation of Care Group. [<http://epoc.cochrane.org/>]
  30. Rethans JJ, Norcini JJ, Baron-Maldonado M, Blackmore D, Jolly BC, LaDuca T, Lew S, Page GG, Southgate LH: The relationship between competence and performance: implications for assessing practice performance. *Med Educ* 2002, **36**(10):901–909.
  31. Wagner EH: Chronic disease management: what will it take to improve care for chronic illness? *Eff Clin Pract* 1998, **1**(1):2–4.
  32. Mead N, Bower P: Patient-centredness: a conceptual framework and review of the empirical literature. *Soc Sci Med* 2000, **51**(7):1087–1110.
  33. Forsetlund L, Bjorndal A, Rashidian A, Jamtvedt G, O'Brien MA, Wolf F, Davis D, Odgaard-Jensen J, Oxman AD: Continuing education meetings and workshops: effects on professional practice and health care outcomes. *Cochrane Database Syst Rev* 2009, (2):Art. No.:CD003030. doi:10.1002/14651858.CD003030.pub2.
  34. Flodgren G, Parmelli E, Doumit G, Gattellari M, O'Brien MA, Grimshaw J, Eccles MP: Local opinion leaders: effects on professional practice and health care outcomes. *Cochrane Database Syst Rev* 2011, (8):Art. No.: CD000125. doi:10.1002/14651858.CD000125.pub4.
  35. Rollnick S, Kinnersley P, Butler C: Context-bound communication skills training: development of a new method. *Med Educ* 2002, **36**(4):377–383.
  36. Cals JW, Scheppers NA, Hopstaken RM, Hood K, Dinant GJ, Goettsch H, Butler CC: Evidence based management of acute bronchitis: sustained competence of enhanced communication skills acquisition in general practice. *Patient Educ Couns* 2007, **68**(3):270–278.
  37. Hammick M, Freeth D, Koppel I, Reeves S, Barr H: A best evidence systematic review of interprofessional education: BEME Guide no. 9. *Med Teach* 2007, **29**(8):735–751.
  38. Colquhoun HL, Brehaut JC, Sales A, Ivers N, Grimshaw J, Michie S, Carroll K, Chalifoux M, Eva KW: A systematic review of the use of theory in randomized controlled trials of audit and feedback. *Implement Sci* 2013, **8**:66.
  39. Grol RP, Bosch MC, Hulscher ME, Eccles MP, Wensing M: Planning and studying improvement in patient care: the use of theoretical perspectives. *Milbank Q* 2007, **85**(1):93–138.
  40. Treweek S: Complex interventions and the chamber of secrets: understanding why they work and why they do not. *J R Soc Med* 2005, **98**(12):553.
  41. McKenzie J, French S, O'Connor D, Mortimer D, Browning C, Russell G, Grimshaw J, Eccles M, Francis J, Michie S, Murphy K, Kossenas F, Green S: Evidence-based care of older people with suspected cognitive impairment in general practice: protocol for the IRIS cluster randomised trial. *Implement Sci* 2013, **8**(1):91.
  42. Hrisos S, Eccles M, Johnston M, Francis J, Kaner E, Steen N, Grimshaw J: Developing the content of two behavioural interventions: Using theory-based interventions to promote GP management of upper respiratory tract infection without prescribing antibiotics. *BMC Health Serv Res* 2008, **8**(1):11.
  43. French SD, McKenzie JE, O'Connor DA, Grimshaw JM, Mortimer D, Francis JJ, Michie S, Spike N, Schattner P, Kent P, Buchbinder R, Page MJ, Green SE: Evaluation of a theory-informed implementation intervention for the management of acute low back pain in general medical practice: the IMPLEMENT cluster randomised trial. *PLoS One* 2013, **8**(6):e65471.
  44. Bhattacharyya O, Reeves S, Garfinkel S, Zwarenstein M: Designing theoretically-informed implementation interventions: fine in theory, but evidence of effectiveness in practice is needed. *Implement Sci* 2006, **1**(1):5.
  45. McSherry LA, Dombrowski SU, Francis JJ, Murphy J, Martin CM, O'Leary JJ, Sharp L, ATHENS Group: 'It's a can of worms': understanding primary care practitioners' behaviours in relation to HPV using the theoretical domains framework. *Implement Sci* 2012, **7**:73.

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